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JULY 1954

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Volume 81 JULY 1954 Number 1

Consequences of the Widespread Use of Antibiotics

LOWELL A. RANTZ, M.D., San Francisco

• Great quantities of antibiotics are used each year. A direct result has been the appearance of large numbers of infections caused by organisms that are resistant to the action of one or more of these drugs. A new syndrome, that of superinfection by bacteria resistant to an antibiotic being administered, has become common. Its recognition is of great importance.

The control of resistant infections requires the development of new antimicrobial agents and new knowledge about the use of older ones in combination.

The medical profession must be circumspect in its use of these important drugs or the time may come when the control of many serious infections may become impossible.

PHYSICIANS, to a greater extent than any persons, know of the impact of antimicrobial therapy on the practice of medicine and the natural history of infectious disease. Even they are not fully aware of the enormous quantities of these agents that are used in the United States each year. Penicillin is now being manufactured at a rate of well over 300 tons per annum—equivalent to 150 million courses of 3 million units each year. More than 100 tons of streptomycin are made, which would permit the administration of 100 million 1-gram doses of this agent.[8] The broad spectrum drugs are also produced in enormous quantities. It is believed that the rate is not less than 250 tons per annum. This is enough to permit the administration of 25 million 10-gram courses each year. Information is not readily obtained as to the production of the other less widely used antimicrobial agents, but it is substantial. Exact figures are not available but it may be readily calculated that more than half a billion dollars a year is spent by patients for these drugs. It is apparent, from these data, that few Americans can escape treatment with antibiotics for any length of time.

It is proper to inquire into the effects of this extraordinarily widespread use of biologically highly active chemical substances. The most important and readily demonstrable outcome has been the selective elimination of the antibiotic-sensitive forms of many common pathogens and the emergence of resistant variants as causes of human disease. In 1943, 90 per cent of all strains of staphylococcus aureus were inhibited by a few tenths of a unit of penicillin per cubic centimeter. This situation still prevails in those parts of the world where few antibiotics are used.[3] At present, 50 to 90 per cent of all strains isolated in the clinical bacteriological laboratory are intensely resistant to the action of this antibiotic.[2] Evidence obtained by culture of the respiratory tract of nonhospitalized patients suggests that the "wild" staphylococci among the population at large are much less frequently penicillin-resistant than are those harbored in the noses and throats of hospital personnel.[7] As a direct result of this fact, staphylococcus infec-

From the Department of Medicine, Stanford University School of Medicine, San Francisco.

Presented before the Section on General Medicine at the 83rd Annual Session of the California Medical Association, Los Angeles, May 9-13, 1954.

tions acquired by patients in hospitals, or by physicians and nurses, are quite universally penicillin-resistant.

Equally disturbing has been the development of intensely tetracycline-resistant staphylococci during the relatively brief period that oxytetracycline and chlortetracycline have been in clinical use.[6] Erythromycin was substituted for penicillin in the routine treatment of patients in a middlewestern hospital. Within five months 70 per cent of all staphylococci isolated from the upper respiratory tracts of workers in that institution were resistant to the action of that drug although all had been sensitive when the experiment began.[5] There can be no doubt that many infections were caused by these resistant organisms. It is evident that staphylococci are highly adaptable microorganisms and it will be fortunate indeed if antimicrobial therapy remains effective for any great length of time in treatment of infections caused by them. Spink recently reported[10] mortality rates in staphylococcus sepsis comparable to those that were observed before any form of antimicrobial therapy was available.

Very similar changes have been seen in the large family of Gram-negative bacilli, particularly among the coliform-aerobacter group. Some years ago a very high percentage of these organisms were sensitive to the action of streptomycin and tetracycline. Table 1 indicates the results obtained in a survey during 1950-1953 in the author's laboratory. It will be observed that various Gram-negative bacilli are irregularly inhibited by the various available agents. It may be calculated from this information that an effective antibiotic will be selected correctly only 50 per cent of the time on the basis of chance alone when Gram-negative bacilli otherwise unidentified are the cause of the disease. This emphasizes the importance of precise *in vitro* study of this group of organisms by satisfactory methods for determining the ability of antibiotics to inhibit the growth of the bacteria.

A second extremely important development, directly the result of the widespread use of antibiotics, has been the increasingly frequent occurrence of infection by organisms which were virtually unknown a few years ago as causes of disease. The present clinical importance of the various pigmented Gram-negative bacilli, of which the Pseudomonas group is the most important, is outstanding.[1, 9] These organisms, generally intensely resistant to most of or all the available agents, are now common causes of urinary and respiratory tract infection, particularly in antibiotic treated patients. Bacteremia, meningitis and empyema are also now commonplace.

A third interesting and, at times, extremely serious

TABLE 1.—*Sensitivity of Gram-negative bacilli to antibiotics*

Organisms	Per Cent Sensitive		
	Streptomycin	Oxytetracycline	Chloramphenicol
E. coli	65.3	76.5	76.0
Paracolon	43.9	51.2	58.6
Proteus	64.6	6.2	16.7
Pseudomonas	19.7	14.5	6.6

outgrowth of antimicrobial therapy has been the clinical problem known as superinfection. This term simply denotes the appearance of an infectious process caused by an organism different from that which was responsible for the initial infection for which the patient was brought under antimicrobial therapy. Such superinfections may occur in the same area as the original process or in a different one. The former is seen most frequently in relationship to the urinary tract and to the lung. The latter may occur in the bowel where staphylococcus and other forms of bacterial enteritis are common, in the lung, the meninges, the endocardium and other sites. The pathogenesis of such superinfection is believed to be as follows: The use of antibiotics (particularly those of the broad spectrum group) suppresses the normal flora of the body cavities and eliminates the bacteria that usually cause disease in the various areas of the body, and this paves the way for invasion by resistant organisms. Some kind of competition undoubtedly exists between the normal and the disease-producing bacteria, which probably is one of the protective mechanisms by which the body deals with organisms that reach potentially infectable areas.

Recognition of such superinfection is of the greatest importance. It tends to occur in specific situations, particularly in the presence of obstructive disease of the urinary tract or of structural disease of the lung, and in special kinds of people—notably diabetics, alcoholics, infants, the aged, and the otherwise chronically sick or injured. Clinical recognition of superinfection is not difficult if there is at first striking improvement for a few days after the beginning of antimicrobial therapy, then relapse. In such circumstances superinfection may be assumed to be present. In many instances, however, this important complication occurs without any intervening period of definite alteration for the better in the clinical course. For this reason superinfection must be always suspected in a patient with an infectious disease which does not respond to antimicrobial therapy in the predicted fashion.

The ultimate recognition of superinfection involves the appropriate bacteriological study of blood, urine, sputum and other infected exudates. Unfortunately such techniques are not always available to practicing physicians. If they are not, the diagnosis must be made clinically. In any case in which antibiotics

are given for 72 to 96 hours without definite improvement, superinfection must be strongly suspected. Almost always in such cases, if appropriate bacteriological investigation cannot be carried out it is better to change to another drug, since if superinfection is present it is always resistant to the action of the antibiotic that is already being administered.

The final important effect of the widespread use of antibiotics and the emergence of organisms resistant to their action, has been the stimulation of research on several fronts. On one front are the large commercial drug firms, who have constantly sought new antimicrobial agents which might be useful in the treatment of resistant infection. Outstanding examples are bacitracin and erythromycin, introduced primarily for the treatment of resistant staphylococcal disease, and polymyxin, whose principal role is in the treatment of Pseudomonas infection. A second important development has been a keen interest in the potential role of combined antibiotics in the treatment of disease.[4] Lastly, it has been necessary to reevaluate methods and techniques. The medical profession is rapidly becoming aware that it must discriminate in the use of antibiotic drugs so that these valuable chemicals will not be wasted in the treatment of trivial disease or in needless prophylaxis, lest the time arise when they will not be available as life-saving agents in patients with serious infections.

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Therapeutic Studies in Hyperthyroidism

Use of Radioactive Iodine

HERMAN STONE, M.D., BORIS CATZ, M.D.,
DONALD PETIT, M.D., and PAUL STARR, M.D., Los Angeles

• Of 112 patients with hyperthyroidism who were treated with radioactive iodine, 110 were relieved of the disease. Nine had transient hypothyroidism. Twelve had permanent hypothyroidism. No other adverse effects that could be attributed to radioactive iodine were noted.

On May 4, 1942, two papers were read before the American Society for Clinical Investigation reporting experiences with radioactive iodine in treating patients with hyperthyroidism.[3, 4] Since that day, a flood of papers has reported the results of many groups of investigators with this new therapeutic agent.

The Thyroid Clinic of the University of Southern California School of Medicine at the Los Angeles County General Hospital began using the eight-day half-life isotope, I^{131}, in April 1948. From that time until September 1953, the drug had been given to 394 patients—to 26 of them for the treatment of thyroid cancer.

This, the first report of the group, deals with an analysis of 112 cases of hyperthyroidism observed for from six months to five years.

MATERIAL AND METHODS

The patients were selected from the group of heterogeneous nationality treated in the Los Angeles County Hospital. Sixteen were males; 96 were females. The age range was from 15 to 85 years.

Diagnosis was established by clinical manifestations supported by physical examination, basal metabolism, determinations of protein-bound iodine in the blood, cholesterol content, radioactive iodine uptake and excretion studies, and, when indicated, measurements of the eyes with the Hertel exophthalmometer. The weight and size of the gland was estimated by palpation at the beginning and during the course of treatment.

Thirty of the patients had known they had disease for more than five years. Sixty-nine had diffuse goiter, 33 had nodular goiter, one had substernal goiter, and nine had no clinical enlargement of the gland.

Sixteen had undergone thyroidectomy before treatment with radioactive iodine; 61 had had previous medical treatment with antithyroid drugs; and six had had both.

Selected for treatment were patients who (1) were past the age of 40, or (2) had had previous operation with subsequent recurrence of the disease, or (3) were considered poor surgical risks, because of serious heart disease or other disturbances, or (4) for various reasons refused operation.

The average single dose of radioactive iodine was 7 millicuries. Patients were observed for at least eight weeks after therapy before further therapy was considered. If at the end of this time the clinical status had not improved and the protein-bound iodine level in the blood had not dropped, the person was considered for re-treatment. Second and third doses of radioactive iodine varied in amount from half to equal the initial dose, depending on the clinical problem and the results of repeated tracer studies.

RESULTS

One hundred ten patients (98.2 per cent) were relieved of hyperthyroidism. One of the two not relieved did not persevere in treatment and the other died of another disease before hyperthyroidism abated.

Ninety-eight of the group (87.5 per cent) returned to a euthyroid status; nine of these (8 per cent) were transiently hypothyroid. In 12 members of the group (10.7 per cent) there developed what appears at this time to be permanent hypothyroidism. In one patient symptoms characteristic of malignant exophthalmos developed after therapy with radioactive iodine, but it is not felt that this condition is related to the type of therapy used to control hyperthyroidism. No exact figures are available with respect to the occurrence of tenderness in the neck after therapy with I^{131}. Tenderness was noted, but never as more than a transient mild problem.

From the Department of Medicine, University of Southern California School of Medicine, and the Thyroid Clinic of the Los Angeles County General Hospital.

Read at the regional meeting of the American College of Physicians, Riverside, February 13, 1954.

The average total dose was 8.8 millicuries of I^{131} in patients with diffuse enlargement of the thyroid gland; for patients with nodular goiter the average was 11.03 millicuries. The variation of doses between one patient and another, however was so great (see Charts 1 and 2) that data on averages have little value. Ninety patients were treated with only one dose; 12 required two doses; and 10 required three or more doses. Of the 33 patients with multinodular goiter, 11 (or 33 per cent) required second or third treatments. Of the 69 patients with diffuse enlargement of the thyroid gland, 11 (or 16 per cent) required re-treatment. Of 61 patients who received previous treatment with antithyroid drugs, 17 (or 28 per cent) required multiple treatments with radioactive iodine. Of 36 patients who had had no previous therapy, medical or surgical, five (or 14 per cent) required multiple treatments with I^{131}. Four of 16 patients (25 per cent) who had had thyroidectomy in the past for hyperthyroidism, required multiple treatments with I^{131}. The average time of remission including those re-treated was 10 to 12 weeks.

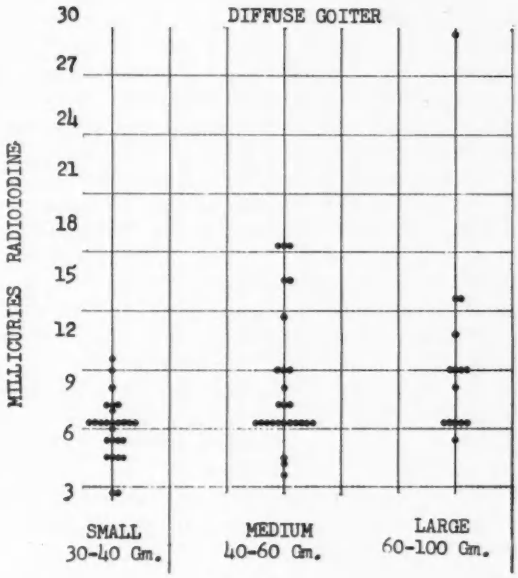

Chart 1.—Dose of I^{131} given for treatment of diffuse thyrotoxic goiters.

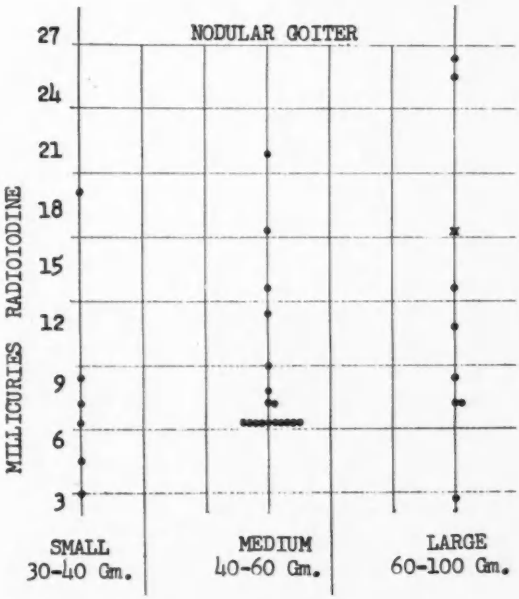

Chart 2.—Dose of I^{131} given for treatment of nodular thyrotoxic goiters.

DISCUSSION

The authors believe that all patients with hyperthyroidism will have response to radioactive iodine therapy if adequately treated. While there are isolated reports of other adverse effects, the authors have observed only hypothyroidism; interestingly enough this occurred in the present series, and in the experience of other investigators working with radioactive iodine,[6] in almost precisely the same percentage as following thyroidectomy.[1] There is obviously no risk of operative death, recurrent laryngeal nerve paralysis or hypoparathyroidism.

Feitelberg and coworkers[2] reported death from a thyroid storm shortly after administration of I^{131} to a patient with a 200-gm. goiter. There is also a report of temporary hyperparathyroidism[8] after radioactive iodine therapy.

The problem of dosimetry is a difficult and frustrating one. One may adopt one of several formulae of calculation based on an estimated weight of the gland involved, the radioactive iodine uptake as determined by an immediately preceding tracer study, and the effective half-life of the isotope. Or one may pass, by way of Seed's[6] lighthearted advice, to the virtual use of a crystal ball. Whatever method of dose determination one seeks to follow, he ultimately comes to agree with Soley and Foreman[7] that "sound clinical judgment rather than simplified formulations" provides the safest guide; and with Seed that there are "no satisfactory criteria for estimating dosage."

When first they used I^{131} the authors employed rough formulation in estimating dosage. Thus, an attempt was made, after palpatory estimation of the size of the gland and after radioactive iodine uptake tests, to deliver 100 to 120 microcuries of I^{131} per gram of the tissue to the thyroid gland. The problems

of such estimates have been well summarized by Kelly.[5] In the last two years, an arbitrary dose of 7 millicuries has been administered to most patients. It is hoped that in subsequent communications results of these two types of approaches to therapy can be compared.

It is impossible to evaluate the differences noted in the various groups as to the number of treatments required. The average initial dose given to those who only required one treatment was 7.2 millicuries, and to those who subsequently required re-treatment, the average initial dose was 7.1 millicuries. The problems of tissue sensitivity, intensity of mechanisms producing the disease, distribution of the radioactive material in the gland, the rapidity of turnover of iodine in the gland, and the size of the gland must influence the amount of radiation delivered. These factors need more careful analysis than has been available to this time in order that dosage may be expressed confidently in terms of equivalent roentgens rather than millicuries.

The average time of remission (reported in a preceding paragraph) is a difficult factor to appraise. The patients in the present series were re-treated in eight to ten weeks if improvement was not noted. It is possible that if there were a longer period of observation, not so many patients would be found to need re-treatment.

The authors wish to acknowledge the assistance of Ernest Barnett, M.D., Hilda Rollman, M.D., Frederick Scharles, M.D., Benjamin Simkin, M.D., George Steeples, M.D., and Robert Stirrett, M.D.

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Snorkel Tracheotomy Tube for Respirator Use

CHARLES P. LEBO, M.D., San Francisco

• The Snorkel tracheotomy tube, a simple modification of the standard tube, overcomes many of the mechanical inconveniences usually encountered in the care of patients with tracheotomy who have to be kept in respirators. With it in place, it is not necessary to use special devices to hold the collar of the respirator away from the site of the tracheal incision. Nursing care of the patient is made easier.

IN RESPIRATORS of tank type the collar covers the neck of the patient at the proper site for tracheotomy. For patients with tracheotomy it has been necessary, heretofore, to depress the collar by use of various devices to hold it out of the way[1, 3, 4] or to use a specially designed collar that leaves the tracheotomy site uncovered. Substitution of chest respirators for those of the tank type has been recommended for cases in which tracheotomy is necessary. (High tracheotomy for the purpose of facilitating respirator care is to be condemned.)

Collar depression is not, in the author's opinion, an adequate solution to the problem, for mechanical difficulties are encountered in removing and replacing inner tubes and in changing tracheotomy tubes.

The Snorkel tracheotomy tube (Figures 1 and 2) is a standard Jackson tracheotomy tube in which a cylindrical metal adapter has been attached to the inner tube escutcheon for the purpose of connecting the inner tube to a standard endotracheal tube. Two types have been developed. In the original type, the adapter is permanently attached to the inner tube. In the modified type, the adapter is removable, permitting the tracheotomy tube to be used either as a standard or as a Snorkel adapter. The modified type offers the further advantage that a special T-tube may be threaded onto the inner tube in place of the Snorkel tube. The adapters, adapter rings, and T-tubes are made of silver-plated brass. Snorkel tubes have been made in sizes 0 to 6 and fit Portex-Magill tubes sizes 3 to 7. Table 1 shows the adapter dimensions and the endotracheal tube sizes corresponding to the tracheotomy tube numbers.

The patient wearing a Snorkel tube is so placed in the respirator that the sponge rubber collar is cephalad to the tracheotomy tube. The proper endotracheal tube is passed through a stab opening in the collar at the 12 o'clock position (Figure 3) and is connected to the Snorkel adapter. The respirator is then closed. Nursing procedure for the care of the opening in the throat may be performed through the respirator ports or by opening the respirator as indicated.

The use of the Snorkel device permits tracheotomy in the proper location without concern as to the future position of the respirator collar. When in place, the device eliminates the usual difficulties encountered in handling tracheotomy tubes, particu-

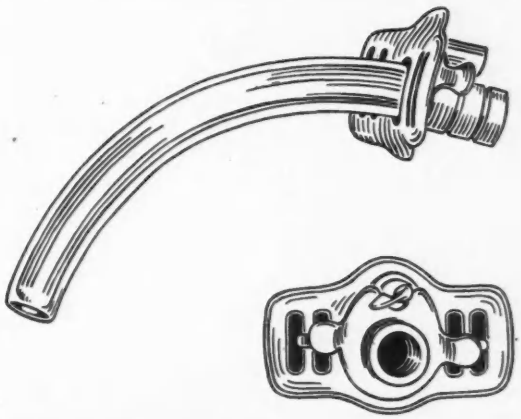

Figure 1.—Snorkel tracheotomy tube, side and anterior views.

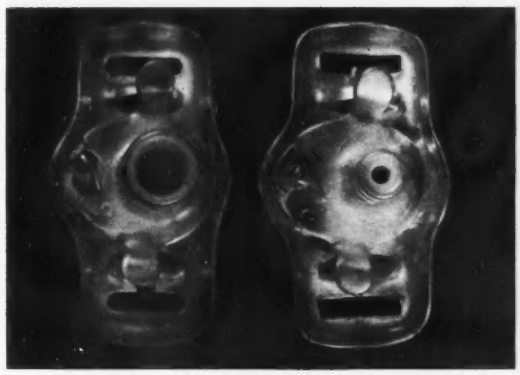

Figure 2.—Snorkel tracheotomy tubes, in sizes No. 5 and No. 0. Anterior view.

From the Communicable Diseases Service of Children's Hospital, San Francisco, and the Division of Otorhinolaryngology, Department of Surgery, Stanford University School of Medicine.

Presented before the Section on Eye, Ear, Nose and Throat at the 83rd Annual Session of the California Medical Association, Los Angeles, May 9-13, 1954.

Figure 3.—Snorkel tracheotomy tube in use as viewed from outside respirator.

larly in children and in short-necked adults. It also removes one cause of reluctance on the part of many special nurses to follow postoperative orders. The pain and trauma to the patient caused by forceful manipulation, which often is necessary when handling the tracheotomy tube in the usual arrangement, is obviated when the Snorkel is used. As an additional advantage, since the respirator collar can fit well when the Snorkel is used, leakage is diminished and the respirator operates more efficiently. The cost of providing a hospital with a proper assortment of Snorkel tracheotomy tubes is nominal.

Two possibilities of disadvantage need be considered. At first there was some concern about the dead space existing within the tube. This was measured and found to be 3.5 cc. for the No. 3 Portex tube, 9.0 cc. for the No. 6 Portex tube, and 13.0 cc. for the No. 7 Portex tube. These volumes are negligible even in patients with diminished vital capacity. The second possible disadvantage is the relative inaccessibility of the tracheotomy tube. However, in the author's experience the efficiency of the Snorkel device in general overcame the problems arising from inaccessibility.

The Snorkel device has proved useful in some patients with tracheotomy not in respirators who require the administration of oxygen. For this purpose a simple T-tube is attached to the adapter so that one end of the horizontal portion of the T is continuous with the adapter. Humidified oxygen is fed into the horizontal portion. This arrangement

TABLE 1.—*Snorkel tracheotomy tube specifications*

Tube Size	Adapter O.D.	Adapter Length	Portex-Magill Tube No.
0	6 mm.	13 mm.	3
1	6 mm.	13 mm.	3
2	6 mm.	13 mm.	3
3	8 mm.	13 mm.	6
4	8 mm.	13 mm.	6
5	9.5 mm.	13 mm.	7
6	9.5 mm.	13 mm.	7

is in effect a two-way system and permits direct suctioning of the inner tube without interruption of oxygen flow. In addition, the patient may be given artificial respiration merely by intermittent occlusion of the free end of the T-tube with a finger while the oxygen is being administered.

Since the standard endotracheal tubes fit the Snorkel tracheotomy device, the administration of general anesthesia to patients with tracheotomy is greatly facilitated.

In laryngectomy and in certain extensive neck dissections which are combined with tracheotomy, the Snorkel tube has been used successfully to permit proper application of pressure dressings without interference with the airway.

The Snorkel tracheotomy tube has been in use on the Communicable Diseases Service of Children's Hospital in San Francisco for the past year, during which time it has proved to be quite satisfactory, not only to the author, but to other attending otolaryngologists.

490 Post Street.

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Antibiotic Anaphylaxis

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• Anaphylactic reactions following the injection of penicillin or other antibiotics have increased greatly during the past several years. These untoward reactions to penicillin were infrequent during the first nine years of penicillin therapy and there can be no doubt that hypersensitivity to these drugs is developing in many people. Therefore promiscuous use of them is to be condemned. It is safer not to use antibiotics parenterally in patients with allergic conditions such as bronchial asthma. The further use of a particular antibiotic should be avoided if the patient has previously shown any hypersensitivity to that drug.

A questionnaire was answered by more than 1,000 California physicians who reported that over 300 patients had severe anaphylactic reactions from parenteral penicillin and streptomycin. There were seven deaths.

Since the antibiotics should still be used when needed, prevention of anaphylaxis is of fundamental importance. The frequency of these reactions can be greatly reduced by the use of antihistaminic solutions combined with the antibiotics. Treatment of these shock-like reactions demands the prompt administration of epinephrine intramuscularly, antihistaminic solutions intravenously and oxygen.

THE CONTINUED USE OF PENICILLIN and other antibiotics has sensitized large numbers of the population to these drugs. An unfortunate by-product of this circumstance is the occurrence of an increasing number of serious and even fatal anaphylactic reactions following administration of antibiotic agents.

Since Waldbott's[20] publication in 1949 of a case in which death followed the injection of penicillin, there has been a growing list of similar reports. Kern[15] collected reports of 18 such cases. Fatalities were recently reported by Altouryan,[1] Higgins and Rothchild,[13] Thomson,[19] Mayer[17] and Bell.[2] Welch and co-workers[21] reported a total of 88 anaphylactoid reactions with 25 deaths collected from a sampling survey of 95 hospitals across the country.

An editorial in the *Journal of Allergy* in 1952 directed attention not only to the importance of unreported fatalities but also to the large number of alarming, near-fatal reactions. Reports of severe cases are included in almost all reports of fatalities.

CASE REPORTS

The following two cases observed by the authors are rather typical of these shock-like reactions.

CASE 1. A 36-year-old housewife was given an intramuscular injection of combined penicillin and streptomycin. These drugs had been administered in the past without difficulty. Less than a minute following the injection the patient said she felt ill and had parasthesias of the face and extremities, substernal pain and nausea. The skin became cold and clammy, the radial pulse was rapid and faint, and respirations were wheezy and labored. Cyanosis developed and the eyelids, lips, face and tongue all became quite swollen. The patient arose from a chair, staggered forward and collapsed unconscious, face down on a bed. Epinephrine was given intramuscularly and benadryl intravenously and the patient regained consciousness. She then vigorously vomited more than a liter of a watery material. Complete recovery took approximately two hours.

Comment: Prompt administration of epinephrine and benadryl was probably lifesaving.

CASE 2. A 66-year-old man who had previously received parenteral antibiotics without any reaction was given an intramuscular injection of combined penicillin and streptomycin. Almost at once he began to sneeze and perspire freely. He complained of substernal pain. He looked pale and very ill. Respirations became noisy and the pulse was rapid and feeble. The patient became cyanotic, lost consciousness and breathed stertorously. He had tonic and clonic contractions of the entire body and became incontinent. Benadryl and epinephrine were given parenterally and oxygen by mask. The patient regained consciousness within five minutes and was then hospitalized. An electrocardiogram taken while the patient was unconscious showed depression of ST segments across the precordium, as much as 4 mm. in some leads. An electrocardiogram taken several hours later showed only slight depression, 1 mm. or less, of the ST segments in leads V4 to V6.

Comment: The electrocardiographic findings suggesting anoxia or coronary insufficiency are of interest.

Presented before the Section on General Medicine at the 83rd Annual Session of the California Medical Association, Los Angeles, May 9-13, 1954.

TABLE 1.—*Anaphylactic reactions to antibiotics as reported by more than 1,000 physicians answering questionnaire*

Antibiotic	Anaphylactic Reactions		
	Moderate	Severe	Deaths*
Penicillin	520	323	7
Streptomycin	49	10	0
Combiotics (penicillin and streptomycin)	0	5	0
Other antibiotics	33	4	0

*Deaths occurred in Berkeley, Centerville, Hayward, Richmond, Sacramento, San Leandro and San Francisco.

To gather data on the incidence of shock-like reaction to antibiotics a brief questionnaire was sent to physicians, chiefly in central California, and more than a thousand replied. The results of the survey are shown in Table 1.

Data on two fatal cases reported in reply to questionnaires follow:

CASE 3. The patient, a 65-year-old pensioner with pulmonary emphysema, congestive heart failure and a purulent bronchitis, had received procaine penicillin G several times in the previous four years, the last injection about nine months previously. Then, when given an intragluteal injection of procaine penicillin G, within approximately 20 seconds the patient collapsed to the floor, had labored noisy respirations, became deeply cyanotic, stopped breathing and was dead in less than a minute after the injection.

Comment: The rapidity of this episode suggests the urgency of starting treatment at once and indicates the necessity of having available emergency medication.

CASE 4. A 60-year-old railroad worker who had received multiple injections of penicillin during the past several years, the most recent approximately six months previously, was given 600,000 units of procaine penicillin G in the arm. Immediately he complained of vertigo and less than a minute later he collapsed to the floor, unconscious. Respirations were shallow and irregular and the pulse was rapid and extremely weak. The blood pressure could not be obtained. The patient died in less than three minutes after the injection. At autopsy, pronounced emphysema and congestion of the lungs with focal areas of atelectasis were noted. The other organs were singularly free of abnormal findings. There was no evidence of pulmonary embolism.

Comment: The paucity of morphologic findings at necropsy is characteristic of anaphylactic death. Death is the result of abnormal physiologic reactions without obvious tissue damage.

Data were obtained on two other fatal cases of the survey. In one a 70-year-old man was given an intramuscular injection of 600,000 units of benzathine penicillin G for bronchopneumonia. Death was sudden. At autopsy pronounced congestion and edema of the lungs and bronchi was observed. The other case, in which autopsy was carried out also, is to be published separately.

DISCUSSION

Since almost 30 tons of penicillin is certified for distribution each month, the astronomical number of injections of the drug is readily apparent. By comparison, the number of anaphylactic reactions which occurs seems small indeed. Nevertheless, a careful and objective appraisal of the problem does not permit a relaxed or comfortable attitude. Kern's[15] analysis, for example, clearly shows that the fatalities following the injection of penicillin have practically all occurred in recent years. This suggests a long, silent period of sensitization to the antibiotics and that now we reap the wild wind of anaphylaxis.

Autopsy findings in two cases have been described by Curphey.[5] The patients, both asthmatic, had diffuse congestion of the lungs and bronchi. There were dilated, engorged vessels in the bronchial mucosa and considerable mucoid exudate in the trachea and larger bronchi. On microscopic examination, acute congestion of the capillary septa with patchy and irregular dilatation of the alveoli were noted. The bronchioles showed interstitial edema with eosinophils, polynuclears and round cells in the submucosal layer. The remainder of the organs showed pronounced vascular engorgement and interstitial edema. The question arises whether some of these findings were not caused by the bronchial asthma per se. The speed at which a fatal termination occurs suggests not only "physiologic death" but obviously would not permit morphologic tissue changes of any extent except perhaps that caused by edema.

In addition to the fatalities there are a large number of near-fatal and severe anaphylactic reactions. (More than 300 such instances were reported in this survey.) Each of these events is a trying experience for both patient and physician.

All reports in the literature suggest a much higher incidence of these reactions in persons known to have allergic disease such as hay fever or asthma. In addition, the incidence of reactions is definitely greater in persons who previously had any manifestation of sensitivity to the drug, such as urticaria.

According to both the literature and the survey here reported upon, penicillin is the antibiotic that causes anaphylactoid reactions most often—probably owing to the fact that penicillin has been used the longest and in the greatest quantity. Severe shock-like reactions to streptomycin also occur,[8] but very few such reactions to the tetracyclines are reported. These drugs, of course, have been given by mouth for the most part.

Various forms of penicillin have caused anaphylactoid reactions: crystalline penicillin G, procaine penicillin G, benzathine penicillin G, penethamate and others. It is of interest that these preparations are chemically different compounds. It is believed

after injection they unite with the serum proteins and form antigens[16] giving rise to specific antibodies. Then after immunological conditions are thus created, another injection of the antigen produces an antigen-antibody reaction, setting loose in the blood stream histamine or histamine-like substances which precipitate the alarming shock-like syndrome.[6] Both experimentally and in humans, antihistaminic agents[10] have been shown to counteract these histamine substances and are therefore indicated in the treatment of the condition.

In the production of anaphylaxis, substances other than histamine may also be responsible.[4] Campbell and Nicoll[3] showed, for example, that a cholinergic substance, possibly a peptone, or a muscle-stimulating compound similar to snake venom or lecithins may share etiologically with the histamines. Undoubtedly, there are multiple anaphylatoxins involved in these explosive reactions. The pathogenetic mechanism is still shrouded in biochemical and immunologic mystery.

PREVENTION OF REACTIONS

An awareness of the danger of anaphylaxis is imperative. Obviously, penicillin and related antibiotics should be used only when there is a definite need or indication for the drug. They should not be given to persons who previously had any of the various allergic manifestations to the drug.[11, 18] Unless really necessary they should not be used in persons who had or have hay fever, bronchial asthma or allergic conditions. The tetracyclines may be more safely prescribed for those patients. A positive and immediate reaction to skin test with the antibiotic controverts its use; a negative reaction does not rule out the possibility of anaphylaxis. Intravenous injection of penicillin should by all means be avoided.

During the years 1944 to 1951, before the authors used antihistaminic solutions prophylactically, seven severe anaphylactoid reactions were observed in a series of more than 1,000 injections of penicillin, streptomycin or dihydrostreptomycin alone or in combination. Since that time, antihistaminic solutions have been combined with the antibiotics as routine procedure and no severe anaphylactoid reactions have been noted in more than 3,000 injections.

Regarding the antihistaminic solutions, the authors have added one of the following preparations to the diluent before injection: aqueous benadryl (10-20 mg.), pyribenzamine solution (10-20 mg.), histadyl solution (20-40 mg.), or chlortrimeton (4 mg.). Each of these preparations has been equally effective in preventing these shock-like reactions.

There is considerable literature concerning the rationale for the prevention of anaphylactic shock by means of the antihistaminic drugs. Feinberg[10] said: "Numerous reports have appeared which indicate that those antihistamines which effectively antagonize the bronchoconstrictive action of histamine are capable of diminishing the severity of anaphylaxis in the guinea-pig." The antianaphylactic activity of benadryl, pyribenzamine, chlortrimeton, histadyl and other antihistamines have been clearly demonstrated in the laboratory animal.[10]

Glazko and Dill[12] reported a high concentration of benadryl in the lungs and spleen of animals to which the drug was given to study its distribution in body tissues. This is of interest since these organs play a vital role in anaphylactic shock. It may be that these antihistamines accumulate at "receptor sites" in competition with histamine.[12]

Corticotropin (ACTH) has been shown to greatly diminish or inhibit anaphylactic shock in guinea pigs if administered one hour before injection of the antigen.[14] Fatal anaphylaxis cannot be prevented by giving corticotropin at the time of the shock reaction. Theoretically, intravenous injection of hydrocortisone should be helpful but this preparation has not been investigated in this connection.

TREATMENT OF THE ACUTE ANAPHYLACTIC REACTION

If the patient can be tided over the first several minutes of the reaction, the chances of survival are good. Hence, immediate, vigorous treatment is imperative. Epinephrine 1:1,000 intramuscularly and antihistaminic solutions intravenously should be administered at once and repeated as necessary. Intravenous injection of aminophyllin has also been recommended. These drugs should be available whenever penicillin is being injected. Oxygen should also be given as soon as possible and preferably under positive pressure to combat pulmonary edema. It is important to prevent obstruction of the airways.

1916 Franklin Street.

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Treatment of the Inadequate Endometrium in Infertility

EDWARD T. TYLER, M.D., Los Angeles

• In many cases of sterility in women, the usual routine investigation does not reveal abnormality sufficient to be considered the cause of the condition. In such cases thorough study of the endometrium is indicated, for in some it will be noted that there is not a consistently good secretory development and conditions are not conducive to nidation.

Intensive hormonal therapy with chorionic gonadotropin, estrogens and corpus luteum preparations may prove helpful where endometrial defects are found, both in sterility and, preconceptionally, in habitual abortion.

MANY PHYSICIANS are on occasion called upon to treat an infertile patient who has had most of the so-called "routine" therapeutic procedures with no success. Often she has gone from one doctor to another and no specific causative factor has been found and nothing conclusive observed to explain the sterility. There is still so much obscure in the infertility problem that many patients fall into the category of "cause unknown."

Cases in which results of most of the usual tests such as carbon dioxide insufflation, postcoital examinations and semen analyses are normal cause considerable concern because, among other things, they raise the problem of finding a new approach for a patient who has often had thorough and highly competent care. In such instances it is sometimes a temptation to advise the patient to give up active treatment in the hope that the situation will resolve itself, or to conclude that the trouble is probably emotional.[2] However, while it appears well established that a neurohypothalamic pituitary-ovarian relationship exists, emotional disturbances cannot be indiscriminately blamed simply because no definite cause has been found. Even though psychological factors are undoubtedly present to some degree in most infertile patients, this consideration is perhaps being overemphasized in the over-all sterility problem.

In recent years some of these normal "problem cases" have been subjected to various types of intensive study by many investigators and occasionally encouraging findings have been reported. The present communication is to outline briefly one approach to the obscure problem of sterility. To help focus a little more attention on the particular condition involved, the somewhat paradoxical term "conceptionless fertilization" is employed to indicate a situation wherein fertilization occurs but the fertilized egg is unable to implant itself in the endometrium, and menstruation occurs on schedule.

Although this is by no means a new concept in sterility, it is one that is often overlooked. Of 24 articles on the management of sterility taken at random only five gave specific attention to this phase of the problem. A few investigators such as Hughes[5, 6] have reported pertinent physiological and pathological observations in considerable detail over the last few years, directing particular attention to the endometrium. Rock[7] has already recently pointed out the significance of endometrial dysfunction, stating that this problem "is an important factor in many cases of infertility." Brown,[1] in England, similarly reported (on the basis of therapy of 111 patients followed by pregnancy in 38 cases) that "in many cases of infertility in which there is no gross pathological condition, treatment to improve the poorly prepared endometrium has proved successful."

As a preliminary to discussing specific therapy in this report, it may be well to review briefly some of the basic physiologic factors.

Implantation of the fertilized egg in the endometrium depends on adequate transport of the fertilized egg through the fallopian tube and into the endometrium, together with the initiation of trophoblast enzymatic activity at a time when the endometrium has been adequately prepared. Preparation of the endometrium depends on pituitary stimulation to the ovary and the production of two specific hormones—estrogenic, which causes proliferation, and corpus luteum which brings about secretory changes and provides fertile ground for implantation of the egg. The corpus luteum hormone is produced after ovulation, for the most part, although there is some evidence that luteinization can occur in unruptured graafian follicles. Lack of normal secretion

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Presented before the Section on Obstetrics and Gynecology at the 83rd Annual Session of the California Medical Association, Los Angeles, May 9-13, 1954.

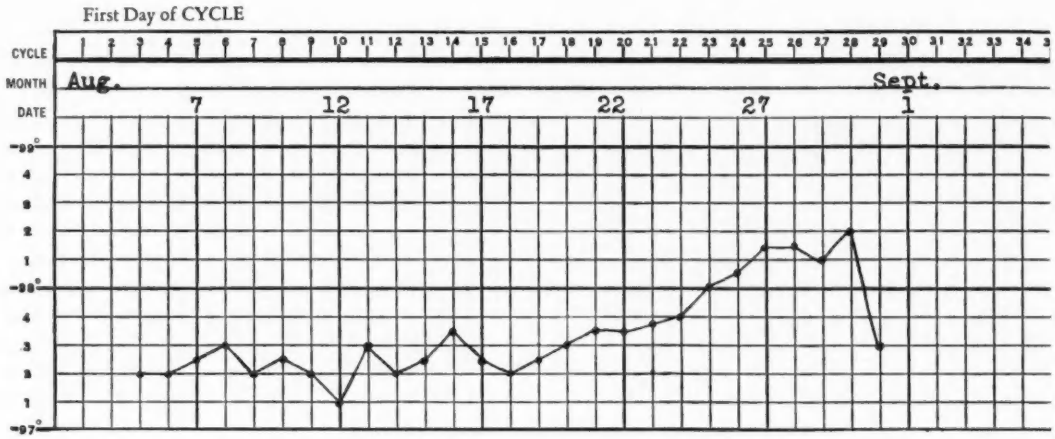

Chart 1.—Basal temperature chart illustrating short luteal phase.

of either or both ovarian hormones may cause inadequate endometrial development in a given cycle. This can result in a "poor secretory" endometrium late in the cycle or it may cause so much delay in endometrial development that the fertilized egg, entering the uterine cavity before the endometrium is adequately prepared, cannot imbed itself.

Since the state of the endometrium is highly important, careful direct study of it as well as interpretation of indirect data is indicated. The measures most commonly employed to evaluate endometrial function are: biopsy, basal temperature studies and pregnandiol assays. Endometrial biopsy should be used not solely for determining the occurrence of ovulation; it should be interpreted by a pathologist who is qualified to note the variations in histological structure, glycogen deposition, enzyme content and other factors that may distinguish a good from a poor secretory endometrium. In Hughes' series of 176 sterile patients, 77 or 43 per cent were found, upon biopsy, to have defective endometrium.[5] One drawback to biopsy as an index of adequate endometrial development is that the histologic structure may vary from one part of the uterine cavity to another and a specimen from one area is not necessarily representative of the entire endometrial pattern. This can be offset in some part by obtaining specimens from various portions of the uterus. Moreover, if upon repeated endometrial biopsy the secretory pattern is consistently observed to be poor, the probabilities are that the deficiency is a significant factor in infertility.

Basal body temperature curves also provide a useful index of corpus luteum function. In normal women the body temperature rises relatively abruptly in the second half of the menstrual cycle, possibly averaging 0.6° F. to 1.0° F. higher than during the first half. The elevation is supposedly caused by increased progesterone secretion or to an increase in one of the breakdown products of progesterone metabolism.[3] That the temperature elevation may not be attributable to progesterone itself is indicated by the fact that certain other compounds may cause significant rise in temperature over the basal level. For example, the author has noted that oral administration of a compound, 19 nor-ethinyl testosterone, causes a far more pronounced elevation than does parenteral progesterone in equivalent doses.

In some patients basal temperature charts will repeatedly show gradual rather than abrupt increase in the second half, and often in such cases the maximal elevation is only 0.4 or 0.5° F. A basal temperature pattern of that kind is believed by some investigators to be suggestive of inadequate corpus luteum function. The author's own data correlating these charts with pregnandiol excretion would tend to support this view. Other basal temperature curves show the second half of the cycle (as indicated by temperature elevation) to be considerably abbreviated. This short second half may also be considered to be a manifestation of poor corpus luteum function (see Chart 1).

Determination of urinary pregnandiol excretion is another method of evaluating corpus luteum activity. Pregnandiol is an excretion product of progesterone metabolism. Assays usually are made on 24-hour urine specimens.

For several years the author has been keeping data on pregnandiol determinations for purposes of comparison, in particular with basal temperature curves. Indications are that pregnandiol values are fairly well related to the other indices of endometrial function. There are many exceptions, but often one finds a general correlation of lower pregnandiol levels with the previously mentioned atypical basal body temperature curves. Patients with temperature

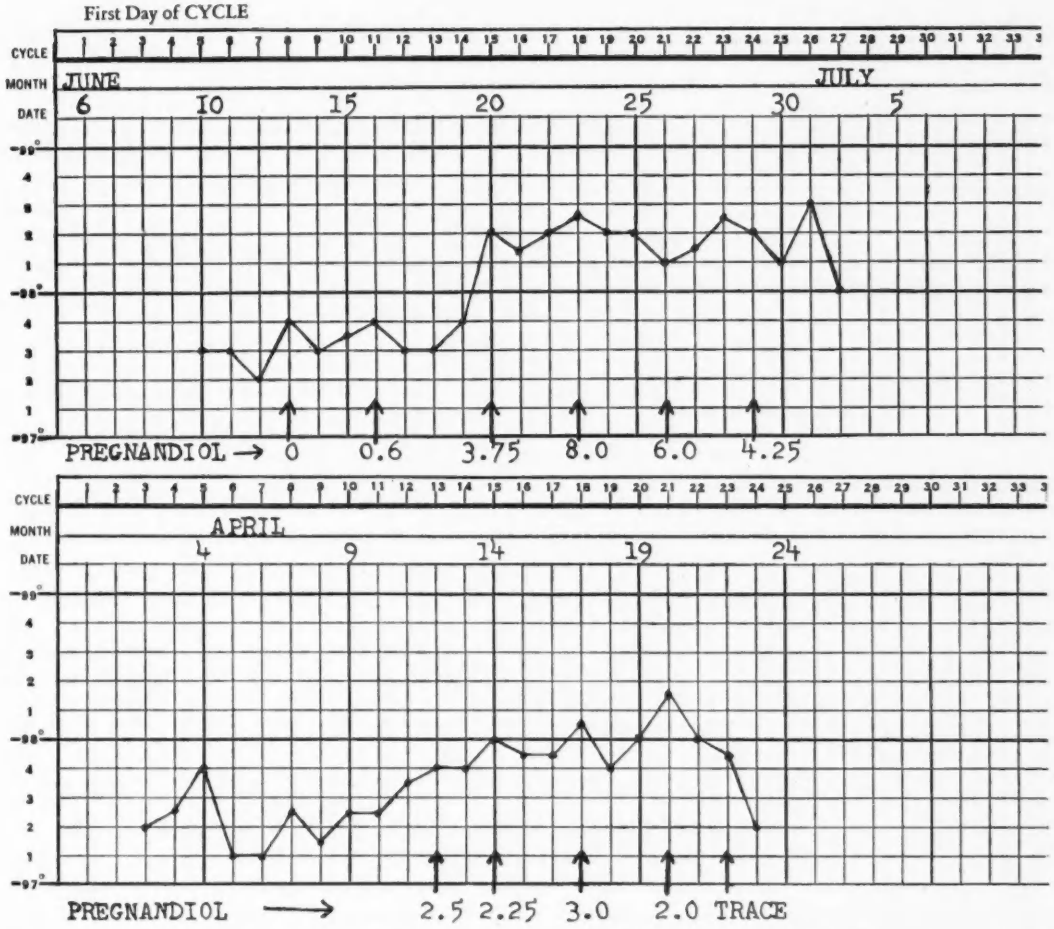

Chart 2.—Comparative values of pregnandiol noted in a normal and an "abnormal" basal temperature chart.

curves of that kind may have pregnandiol excretion of no more than 4.0 mg. in 24 hours, whereas patients with good endometrial function (as indicated by other data) not uncommonly have pregnandiol excretion of 8.0 mg. to 10.0 mg. in 24 hours. A comparative study of menstrual cycles in different patients is given in Chart 2 to illustrate the range of values that may be found in each instance.

The author has administered progesterone to amenorrheic women and has carried out pregnandiol excretion determinations in those cases in order to see how close the correlation might be. When given 250 mg. of progesterone orally in 24 hours, these women excreted between 35 and 50 mg. of pregnandiol in 24 hours. This implied excretion of approximately 15 to 20 per cent. When dosage was lowered, the proportion of excretion stayed the same, indicating close correlation. Parenthetically, it is of interest that while progesterone appears to be well absorbed when given by mouth, the physiological effect is not consistent. This may be related to steroid inactivation in the liver.[4]

Any combination of the foregoing methods of evaluating endometrial quality may point to the endometrium as a specific problem. It should also be noted that even if hormones are present in normal amounts the endometrium may be refractive and not respond to normal hormonal stimulation.

In cases in which inadequacy of the endometrium is a factor, hormones should be given in large enough dosage to have physiologic effect. Although the cost is relatively high, lesser dosage is entirely wasted. Besides estrogens and corpus luteum hormone, chorionic gonadotropin should be given for ovarian stimulation. Giving only the former two hormones might inhibit corpus luteum development. Administration of the three hormones should be started as soon as body temperature determinations indicate ovulation probably has occurred. Various dosage combinations may be used. One schedule

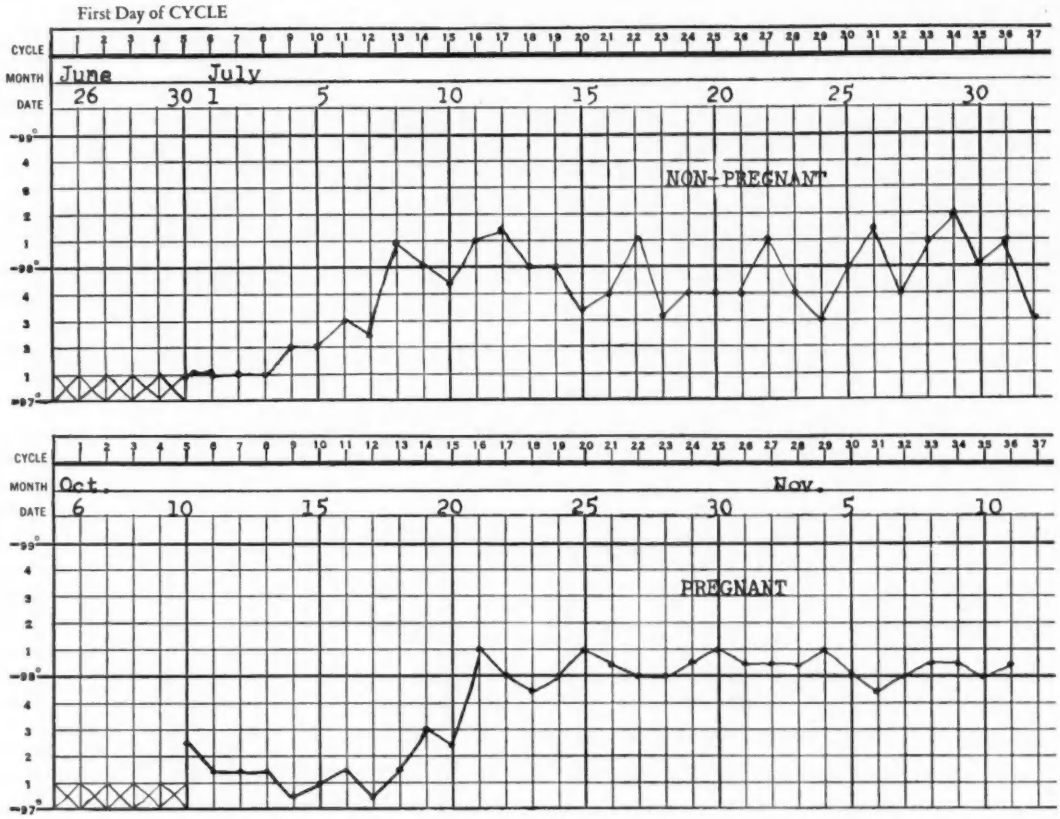

Chart 3.—Irregularly elevated basal body temperature chart observed in patient whose menstrual period is delayed by intensive medication, as compared with consistent elevation generally seen in pregnant patient.

used by the author is to give 1,000 international units of chorionic gonadotropin, 1 mg. of estradiol trimethylacetate and 10 mg. of progesterone intramuscularly on alternate days; and in addition either 75 mg. of anhydroxyprogesterone and 2 mg. estradiol trimethylacetate by mouth daily or one 1 mg. buccal tablet of estradiol benzoate and 10 mg. of progesterone three times daily. Hormonal therapy should not be started until it is fairly likely from the temperature chart that ovulation has occurred. If begun earlier, ovulation may be inhibited or the basal body temperature elevation brought about by the medication might cause uncertainty as to when ovulation occurs. On theoretical grounds, however, therapy should be started promptly upon the occurrence of ovulation in order to get adequate endometrial development for implantation of the ovum some five to seven days later. Once therapy is initiated it should be continued until about the sixteenth week after ovulation.

The therapy described may cause a delay of a few days in the onset of menstruation if pregnancy does not occur. In some instances there is a greater delay but usually it can be distinguished from the interruption caused by pregnancy in that the basal temperature is inconsistently elevated whereas in pregnancy the elevation is sustained (Chart 3). With high dosage of any of these hormones, of course, it is possible to produce prolonged delays in the onset of menses, including strong changes of decidual type.

In a series of patients with "functional" sterility who were treated by the author there were 39 cases in which all the major factors could be considered relatively normal and evidence pointed to inadequacy of the endometrium as the specific problem. Twelve of the patients (30.7 per cent) in this group became pregnant during intensive treatment as described. A number of other patients conceived while therapy of this kind was being carried out, but as additional factors were present, conception could not be attributed to endometrial improvement alone. Most of the 12 patients whose pregnancy was ascribed to endometrial therapy were persons with sterility problems of fairly long standing who previously had had many other kinds of therapy.

It may also be noted that inadequacy of the endo-

metrium can also be a factor in certain instances of habitual abortion. Statistics concerning effectiveness of therapy in abortion are difficult to evaluate and the author does not intend to imply that endocrine therapy of the type described will prevent habitual abortion. However, it is the opinion of several investigators that preconceptional therapy with heavy doses of estrogens and progesterone, as well as chorionic gonadotropin, may in some instances, salvage pregnancy. Hughes said: "Failure of the endometrium to produce adequate amounts of carbohydrate appears to be a cause of sterility and particularly of habitual abortion. The determination of the secretory activity of the endometrium serves as an important index in determining the cause of sterility and abortion. Lack of preparation of the endometrium is primarily due to failure of the pituitary to produce adequate amounts of luteinizing hormone for corpus luteum stimulation."

The author has observed cases in which, after as many as six previous abortions, pregnancy was continued to term following preconceptional therapy. The specific purpose of the treatment in these cases prior to conception is obviously to insure good nidation. It is probable that if endocrine therapy is of value at all in abortion, the value is prophylactic rather than therapeutic. It cannot be considered particularly effective in threatened abortion, for there the pathologic condition is already established and unalterable changes often exist.

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A Successful Method of Treatment with Typhoid Vaccine

EVELYNNE G. KNOUF, M.D., and ALBERT G. BOWER, M.D., Los Angeles

• During a 12-year period 50 patients with measles encephalitis were treated with typhoid vaccine—45 of them not until they were in a vegetative state. There were no deaths in the treated cases. All except one were clinically normal after treatment was ended. Late in the series it became apparent that after the clinical normal is attained and the electroencephalogram becomes normal, treatment should still be continued until the cortex has been "challenged" repeatedly and the electroencephalogram shown to remain normal.

The "shock" element in the treatment with typhoid vaccine was prevented by anticipating and circumventing the unfavorable reactions to the vaccine.

It may take 20 to 50 treatments or more with typhoid vaccine to return a patient to normality. Each individual is different and responds in a different period of time.

IN THE 12 YEARS ended June 30, 1952, measles encephalitis was diagnosed in 215 patients, 171 of them under 12 years of age, at the Los Angeles County General Hospital. Fifty of them with apparently severe damage to the central nervous system were treated with typhoid vaccine—in almost all cases after there seemed little likelihood of spontaneous return to normal. The corrected death rate in the group not treated with typhoid vaccine was 2.7 per cent, and in the treated group there were no deaths. All except one of the treated patients were clinically normal after treatment.

Although bronchopneumonia is the most common complication of measles, encephalitis is the most dreaded. This complication is usually recognized by change in the sensorium of the patient, characterized by varying degrees of lethargy or coma, or by agitation, as seen in those who are hyperirritable, irrational, maniacal or psychotic. Deviation from the normal personality is present in all cases. To the cerebral signs may be added meningeal irritation as manifest by stiffness of the neck or back. Some degree of myelitis with weakness and paralysis is common. Occasionally bulbar involvement as evidenced by cranial nerve paralysis may be noted.

Of the 215 patients with measles encephalitis in the present study 16 per cent had pneumonia in addition to encephalitis. Also, 40 per cent had a generalized convulsion at the onset or early in the course of the encephalitis and 76.4 per cent had body temperatures of 101 degrees F. or more at the time of the complication. Only 6.9 per cent had a hemorrhagic rash. Fifty-three per cent had meningeal signs, 9 per cent bulbar involvement, 3.4 per cent cord bladder, 6.9 per cent weakness and paralysis of one or more extremities and 8.9 per cent athetoid or choreiform tremors. Reflexes were normal in 58.6 per cent of the cases. Headache was a prominent complaint in only 5.5 per cent of these patients.

As to the mental status, 46.5 per cent were lethargic, sleepy or drowsy; 35.5 per cent were deeply comatose; 16.6 per cent were conscious but irrational, incoherent, agitated and hallucinatory. Interestingly, 1.4 per cent had a clear sensorium and had meningeal signs *only*.

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Encephalitis occurred most frequently within one to five days after the appearance of the rash; however, it may occur as long as 21 days after rash develops.

Leukocytes in specimens of peripheral blood varied from fewer than 5,000 to more than 50,000 per cu. mm., with polymorphonuclears predominating. Spinal fluid cell counts also varied widely, from fewer than 10 to more than 1,000 per cu. mm., with lymphocytes predominating. In 45 per cent of the cases the range was from 10 to 100 cells, while in almost 40 per cent it was from 400 to 1,200 per cu. mm.

Of the 50 patients treated with typhoid vaccine, 45 were deeply comatose at the beginning of therapy. The other five had become responsive and were returning slowly to normal, but, because of grossly abnormal electroencephalograms, it was decided to treat them. All except two of the 50 patients were afebrile at the start of therapy.

A competent neurologist examined all the treated patients, for they were the ones expected to remain abnormal, to have undesirable neurological residual effect, or have to be cared for in institutions. Eight of them were paralyzed in two or more extremities.

All returned to normal. Four required short term physiotherapy.

Following is a report of a case in which there was severe involvement of the central nervous system.

REPORT OF A CASE

A six-year-old girl had daily fever of 102 degrees to 107 degrees F. for a period of three weeks before starting therapy. At onset of treatment the child was like a wax doll that breathed; she had been fed entirely by stomach tube. All extremities were spastic with exaggerated contractures. She had convulsions repeatedly and on 16 different occasions manual resuscitation and intracardiac injection of epinephrine was required. Apparently the continuous high fever was owing to encephalitis because no intercurrent infection was found upon repeated examination. It was felt that nothing could be accomplished with typhoid vaccine but because of the insistence of the mother and for lack of anything better, treatment was given intravenously with 50 million typhoid organisms for the initial dose and a total of 15,000 million organisms in five days. Within one month after the last dose, the patient talked intelligently and obeyed commands, and within six weeks she was discharged with recommendation for physical therapy for tight muscles. She was observed for two years and during that time she grew and developed physically as she normally would have. She had no convulsions and although she did have temper tantrums, she kept up with her school work.

The patient in the foregoing case was insufficiently treated by present standards. However, the results were indirectly responsible for much of the authors' present thinking about typhoid treatment of encephalitis. The child had had daily convulsions for the three weeks preceding therapy, yet after the first treatment the seizures ceased and did not occur again in the two years of observation following the illness. Although the vaccine produced no higher fever than the disease itself, after the first dose of vaccine the temperature dropped to normal for the first time in weeks. Hyperpyrexia could not be the sole factor in the use of typhoid vaccine, for if it were the patient's fever before treatment should have brought about cure.

From the results the authors concluded that no matter how badly involved the central nervous system might be, even to the point where it seems that every brain cell must be involved, it cannot be assumed that complete or even partial destruction has occurred until therapy with typhoid vaccine has been tried.

The youngest patient treated was one year old, the oldest 56. Both recovered from encephalitis and both had normal electroencephalograms when discharged. Electroencephalograms were made of 44 of the 50 patients, and 38 had normal tracings at the completion of therapy. Six had abnormal tracings at the time of discharge, although clinically they were well. Five of the six were lost to further observation, but one was reexamined a year later and the electroencephalographic tracing indicated slight diffuse abnormality.

In 15 cases in the treated group, follow-up observation could not be carried out. Of the remaining 35 patients, five were observed from time to time for five years, six for three years, ten for two years and 15 for one year. All except one were leading a normal existence when last observed, going to school or working. Exaggerated emotional instability had been reported in four cases; petit mal seizures, controlled with Dilantin,® in one.

Criteria for Treatment

During the 12 years of this study the authors did not hasten to begin vaccine therapy in any case. Time was allowed for spontaneous return to normal without vaccine therapy, and in 152 of the 215 cases of encephalitis this did occur concomitantly with decline of the temperature to normal after the febrile stage of the disease, with complete recovery within the five days following. In every instance a minimum of five days of normal temperature was permitted to pass before treatment with typhoid vaccine was considered. Then, if the patient was abnormal, preparations were made for treatment, provided the family gave a written request for therapy. It was explained to the parents or relatives that nothing could be promised with regard to treatment and that therapy could be stopped at any point.

Treatment was never commenced in the presence of pneumonia or any other serious complication except encephalitis; after the secondary complication cleared, typhoid vaccine therapy was begun.

Owing to the rather strict criteria for starting treatment 45 of the 50 who did receive treatment were completely "vegetative" by the time it was begun.

Criteria for Cure

Patients with measles encephalitis are not considered cured upon return to clinical normality, but only after the electroencephalogram tracing also is normal and remains normal during a test treatment during which the cortex is challenged.† In addition the patient, if cured, should be able to return to his normal environment and carry on his accustomed duties without difficulty. In other words he should be able to carry on a normal existence unhampered by tremors, convulsions, abnormal behavior or changed personality. That these objectives can be

†After a normal electroencephalogram is obtained, a typhoid vaccine treatment is given for test purposes. If the patient is cured, the electroencephalogram remains normal during and after treatment; if not cured, it reverts to abnormal during therapy.

obtained and retained by patients with encephalitis who otherwise would die or be institutionalized was demonstrated repeatedly in the present series, as well as in encephalitis cases of different origin, and not reported.

Vaccines Used

During the first eleven and one-half years of the period here reported upon, commercial vaccine was used. Although typhoid vaccine alone was given whenever available, the combination typhoid and paratyphoid triple vaccine was used in at least 50 per cent of the cases. The number of typhoid organisms in the various vaccines varied from 500 million to 2,000 million per milliliter. However, as the dose was estimated on the basis of total organisms it mattered little whether the vaccine had 500 or 2,000 million per milliliter. Orders were never written for milliliters or fractions of a milliliter of vaccine, but rather for the exact number of hundred million organisms (typhoid alone, or a total of typhoid and paratyphoid organisms, as the case might be.)

During the last six months of this study only freshly prepared typhoid vaccine containing no preservative was used, the organisms numbering from 6,500 to 15,000 million per milliliter. Since large doses of commercial vaccine were used in treating patients with severe disease (as much as 50 to 150 milliliter per treatment) it was felt that the preservative used in the vaccine constituted a potential menace to the safety of the patient. As no freshly prepared vaccine without preservative is available on the market, the bacteriologist at the hospital provided one.*

During the 12 years covered in this series, five patients with encephalitis, one of whom had measles encephalitis, were treated with typhoid bacteriophage instead of vaccine. A febrile response almost identical to that of the typhoid vaccine was obtained. None of the patients showed any effective response clinically. The one with measles encephalitis was able to walk and feed himself but, beause of severe grand mal seizures and failure to return to anything resembling clinical normality, he finally was placed in an institution.

Administration of the Vaccine

During the first five years of the series, the predetermined dose of typhoid vaccine was given directly in the vein, undiluted, and a violent, bed-shaking chill occurred within 5 to 20 minutes thereafter, fever going to 105 degrees or 107 degrees F. Usually within the 6 to 12 hours following, the temperature became normal or subnormal. Giving vaccine in this manner proved to be so harrowing to patient, nurse and physician that the estimated dose of vaccine was diluted in 300 to 500 milliliters of 5 per cent dextrose and water and the mixture was infused at a rate of approximately 100 milliliters per hour. With this method the chill was less severe and often absent, the temperature reached a peak more slowly and returned to normal within 24 hours.

In the last five months of the 12-year period, typhoid vaccine was given intramuscularly. Larger doses had to be used to produce a similar febrile reaction, and more treatments had to be given to attain maximum benefit. However, patients did respond when the vaccine was given intramuscularly, with the advantage that treatment could be continued after venipuncture became difficult or impossible.

Expected Reactions with Typhoid Vaccine Treatment

In at least 50 per cent of cases a chill lasting from 20 to 60 minutes occurred within 30 minutes to two hours after treatment was begun. The peak of temperature, which varied from 101 degrees to 107 degrees F. rectally, was reached in two to five hours when vaccine was given intravenously and in four to six hours when given intramuscularly. The temperature usually returned to normal within 18 to 24 hours after the beginning of therapy. In a small number of cases a secondary rise of temperature to 101 degrees F. or more occurred on the day following therapy.

Clearing of the sensorium usually occurred after five or six treatments although often there was evidence of improvement after the second or third. Some patients passed from a comatose state to overactivity and mania. If convulsions occurred during the disease, they ceased with treatment. Memory returned late.

Trophic ulcerations ceased to develop and old lesions healed rapidly after four or five treatments. Sometimes this occurred several treatments ahead of the clearing of the sensorium.

Before therapy, the number of leukocytes in the blood was within the normal range (7,000 to 9,000 per cu. mm). At the peak of reaction, relative leukopenia occurred, the number of cells varying between 3,000 and 5,000 but with a disproportionately high number of neutrophiles (70 to 80 per cent). Four to six hours after completion of therapy, the number of leukocytes varied from 20,000 to 80,000 with neutrophiles exceeding 90 per cent; but 24 hours

*The vaccine is made as follows: Recently isolated typhoid bacilli are used. Eighteen-hour broth cultures are inoculated onto tryptose agar in Kolle flasks. After 18 to 24 hours' incubation at 37 degrees C. the organisms are washed off with sterile physiological saline solution and killed by 56 degrees C. in 2 hours. The organisms are washed once with saline solution, resuspended in saline and the number of organisms per milliliter determined turbidometrically, using a photoelectric colorimeter. The vaccine is checked for sterility and then sealed in vials of 5 or 10 milliliter. Sterility tests are made at least every two weeks as long as the vaccine is being used. Adequate refrigeration is maintained at all times.

after the vaccine was administered, the leukocyte content was usually back to normal. (If not, or if the number is above 20,000 per cu. mm., it is better to postpone treatment at least another 24 hours.)

Widal's test, carried out at intervals, showed a gradual rise in titer. In some cases in the present series titers in excess of 1:12,000 were observed.

TREATMENT OF THE PATIENT

Requirements for Treatment

For treatment with typhoid vaccine the patient must be hospitalized, preferably under the supervision of one or more physicians. One physician should be responsible for writing all orders and for making each decision as to the amount and mixing of the vaccine to be given.

Nurses must be in constant attendance during each 24 hours of therapy. There is distinct advantage in having the same nurses each time, for the entire procedure is smoother and the physician has much better control of the situation.

Preparation of the Patient

All patients who received typhoid vaccine treatment were poor medical risks beause of both physical and mental deterioration. Determinations of the blood carbon dioxide combining power and of the non-protein nitrogen, potassium and chloride contents were made and if abnormal were corrected. The hemoglobin content was determined repeatedly, and if the value fell to 60 per cent, transfusions were given. The urine was examined frequently. Five per cent dextrose solution was given intravenously by continuous drip for at least 24 hours immediately preceding therapy. Temperature, pulse and respirations were determined every four hours before treatment. If convulsions occurred before therapy or if the patient was wild, noisy, or extremely disturbed, chloral hydrate or sodium Luminal was given.

During the last year of the period under discussion, the cholesterol content was determined routinely along with the other chemical studies of the blood. Of a total of 35 patients with encephalitis, all with abnormal electroencephalograms, only six had cholesterol content as low as 200 mg. per 100 cc. In 17 cases it was between 250 and 300 mg. and in 12 it was more than 300 mg. Sixteen of the 35 in this group were treated for a period of two months with Proloid (thyroid globulin) and all had pronounced change for the better in actions and attitude. The changes were noted in patients who had made spectacular recovery, clinically and by electroencephalogram, after treatment with typhoid vaccine. Bone age studies in children show these patients to be hypothyroid.

The Dose of Typhoid Vaccine

When commercial vaccine is given intravenously, the initial dose is 50 million organisms for children and 100 million for adults. With this, as well as succeeding doses, if the maximum temperature does not exceed 102 degrees F. in two hours after it is given, twice the amount already given may be administered again the same day. On each succeeding day (unless freshly prepared vaccine is used) the amount of vaccine given is twice that of the previous dose if the peak temperature exceeds 103 degrees F. rectally, and three times that if less than 103 degrees F. In spite of the fact that the patient may reveal no fatigue or untoward effect, it is wise to permit rest periods of three or four days after each three to five days of continuous treatment. If the patient is desperately ill, it is best to treat only on alternate days.

The doses of freshly prepared vaccine needed are much smaller than those required when ordinary commercial vaccine is given, and the rule of doubling or tripling each succeeding dose does not hold. When fresh vaccine is given intravenously, the initial dose may be 100 million organisms for either children or adults. It is given in 300 to 500 milliliters of 5 per cent dextrose in water. If the patient has a chill and the peak temperature reaches 103 degrees F., the second dose should be the same, and the third identical with the first and second if the same degree of fever is attained. Succeeding doses should be increased very slowly and cautiously, by adding no more than 150 to 200 million organisms at a time.

When given intramuscularly, the vaccine should be injected deep into the muscles of the hip or thigh and in a different area each time. Doses must be increased by 200 to 500 million organisms each time when the intramuscular method is used. This is a smaller increase, approximately 25 per cent, than when commercial vaccine is used. The fresh vaccine may be given undiluted without producing local reaction. In fewer than one per cent of the cases in which it was used in this manner did redness, swelling or tenderness develop. (Because at least five times as much of the commercial vaccine is needed to give comparable hyperthermic response, its use intramuscularly frequently produced local reactions by virtue of volume alone.)

If intravenous and intramuscular methods were combined in the same patient, the dose was calculated separately for each method. For example, a patient receiving 500 million organisms intravenously one day followed by a temperature of 105 degrees F., was on the following three days given intramuscular doses of 2,000 million, 4,000 million and 6,000 million with temperature peaks of 102

degrees to 103 degrees F.; on the fifth day another intravenous dose, this time of 500 or 650 million organisms, may be given and cause a peak temperature of 105 degrees or 106 degrees F. Thus there can be no interchange of intramuscular or intravenous doses.

Sample Orders Written for Treatment

Orders should be written in such a fashion that nothing is left to the judgment of the nurses. They must be all-inclusive and anticipate every possible complication to treatment. A sample list is as follows:

1. Typhoid vaccine (here state the dose in numbers of organisms) in 300 or 500 milliliters of 5 per cent dextrose and water to which has been added 2,000 mg. of ascorbic acid and 100 mg. of nicotinic acid. If it is to be given intravenously, state the rate (20 to 60 drops per minute). Or the stated dose of vaccine is given intramuscularly (thigh or hip).

2. Determine rectal temperature, pulse and respiration every 15 minutes until temperature reaches normal, and then every two hours. Determine blood pressure every hour in patients over 14 years of age.

3. Give acetylsalicylic acid, lave with warm alcohol and fan or give tepid sponge baths as needed, or every two hours for temperature of 104 degrees F. or over.

4. Dramamine 50 mg. every three hours as needed for nausea or vomiting.

5. Oxygen as needed.

6. Eschatin® (2 ml. for children or 4 ml. for adults) every two hours for six doses and then every two hours for pulse of 130 or over in children and 120 or over in adults.

7. Epinephrine (2 minims for patients under 2 years of age, 3 minims under 4 years, 4 minims between 4 and 14 years, and 5 minims over 14) every 15 minutes for four doses, then every two hours as needed for pulse of 130 or over in children between 1 and 14 years and for pulse of 120 or over in patients over 14 until the pulse rate comes down.

8. Watch for and relieve immediately any abdominal distention by rectal tube and prostigmine (1:2,000 solution), 0.25 ml. every 15 minutes for two hours. If the distention is not relieved partially in 30 minutes, gastric suction should be carried out.

Typhoid vaccine therapy has fallen into disrepute because of the dangerous and sometimes lethal shock reaction that frequently follows intravenous injection of even small doses. Such reaction must be anticipated by recognizable signs and prevented by reliable therapeutic measures.

Death may be circumvented by early recognition of the signs of impending collapse before the patient enters shock. Tachycardia, especially in the very young, with or without cyanosis or pallor, is one of the earliest signs. Epinephrine, administered in series as outlined, eliminates tachycardia and brings about immediate improvement, but will be ineffective if abdominal distention is unrelieved. Eschatin is used as an additional prophylactic measure.

Challenging the Cortex

During the first six years of the period covered by this report treatment sometimes was stopped too early. Since the authors had nothing but clinical improvement as a guide to treatment, it was necessary to rely on the judgment of parents and relatives as to when the patient was normal.

From experience in treatment in the last two years of the period it was learned that clinical normality is not enough, and treatment now is continued until the electroencephalogram becomes normal. When that occurs, the cortex is challenged by more therapy, and an electroencephalogram is taken during the height of treatment to see if the pattern remains normal or again shows abnormality under such conditions. Also, if the electroencephalogram becomes normal but the patient remains clinically abnormal, treatment is continued, regardless of the electroencephalogram.

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Lumbar Sympathectomy in Older Patients

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• Of 43 older patients (aged 65 to 83 years) with arteriosclerosis obliterans treated by lumbar sympathectomy for one or both limbs, 19 had excellent result, 13 had fair result and four had poor result. One died postoperatively and six later. Results were better than prognosticated from response to sympathetic block. Thirty-four patients considered the operation worth while and twelve, after unilateral sympathectomy, requested operation for the other limb also. Twenty-four after operation could walk farther without claudication.

No CRITERIA for lumbar sympathectomy in arterial insufficiency due to arteriosclerosis obliterans have been found fully satisfactory. The operation has been accepted as a useful procedure, however,[1, 3, 5] and is generally considered suitable for younger patients. However, there are a great number of patients past 65 years of age, and usually physiologically older, who are in need of help but have been denied this operation on the basis of age alone. To aid in development of criteria for selection of older patients for sympathectomy, a study was made of 43 patients 65 to 83 years of age on whom sympathectomy, bilateral in 17 cases, was performed. The operations were done in a period of five years, and the present study is based on observations made within six months to five and a half years after operation.

SELECTION OF PATIENTS

None of the patients in the group had thromboangiitis obliterans or traumatic arterial insufficiency. All gave a history of progressing arterial insufficiency, which was a positive requisite for operation. As a means of determining beforehand the probabilities of benefit from operation, sympathetic block was carried out in all cases and the response was judged on the basis of pneumoplethysmographic change, rise in temperature of the extremity, increase in tolerance for walking, and subjective response. None of the patients had the so-called paradoxical response to sympathetic block. Spinal anesthesia and peripheral nerve block were used in only a few cases.

POSTOPERATIVE COMPLICATIONS

In 29, or 67 per cent, of the patients operated upon, postsympathectomy neuritis developed, usually on the sixth to the tenth postoperative day. It was always worse at night, was annoying but not unbearable, and lasted from two weeks to eight months. Reassurance as to its nature and administration of acetylsalicylic acid compound are all that is offered at present in such cases; earlier, a patient given codeine became addicted to it. In addition to the foot care prescribed for other patients, daily applications of lanolin ointment are used to keep the skin soft. Surgeons in some large centers say they have not observed postsympathectomy neuritis; it is possible that this complication does not become evident until after the patients have left the centers.

Other complications were atelectasis, mild adynamic ileus, urinary retention, incisional hematoma, and headache, none of these being severe or leading to prolonged illness. They responded to ordinary measures. In no case did gangrene progress after operation.

Thrombophlebitis occurred in two cases, causing only mild edema which nevertheless was something of a problem since elevation and elastic bandaging of the involved extremity were contraindicated, yet circulation was hindered and vulnerability to infection was increased. Anticoagulant therapy and horizontal bedrest proved effective. In one of these patients, minimal and asymptomatic edema developed after he became ambulatory. Elastic bandages were tried but caused pain; they were discontinued, therefore, and after three years there have been no symptoms although minimal edema still recurs at the end of the day. The other patient also had moderate edema with aching pain. These symptoms were relieved with elastic bandages and recurred when the bandages were removed. Therefore the patient continued to wear bandages. The experience with thrombophlebitis in these cases has led to the subcutaneous administration of 50 mg. of heparin every six hours in all cases where anticoagulants are not contraindicated. Since this measure was adopted there has been no thrombophlebitis—nor any hemorrhage—in the last 18 cases.

One patient, aged 74, died in hospital on the fourth postoperative day. Death was sudden and was attributed to coronary artery thrombosis, which was

TABLE 1.—*Results of sympathectomy as compared with preoperative prognosis as determined by response to sympathetic block. Forty-three patients more than 65 years of age.*

Preoperative Prognosis	Temperature Rise in Toe on Sympathetic Block	Total Cases	Results*			
			Good	Fair	Poor	Died†
Good	9–14° F.	12	9	3	0	0
Fair	5– 8° F.	19	8	7	1	3
Poor	0– 4° F.	12	2	3	3	4
		43	19	13	4	7

*Six months to five and a half years after operation.
†Only one of the deaths was in the postoperative period.

observed at autopsy. This patient, who had had thrombosis of the terminal aorta and impending gangrene of the right foot, was operated on before the postoperative use of heparin became routine. Preoperative electrocardiographic findings were within normal limits.

Popoff[6] reported precipitation of gangrene, an unusual complication, not experienced in this series, which he attributed to the opening of the arteriovenous shunts with further diminution of circulation through the nutrient capillaries.

RESULTS

All patients have been examined from time to time, by one or another of three physicians familiar with vascular disease, since the operations (six months to five and a half years at the time of this presentation). According to the clinical records, the resident surgeon considered 40 of the 43 patients improved on discharge; in most instances this opinion was corroborated by the chief of service and by the patient's declaration. At last report, 30 were still free of symptoms of arterial insufficiency, except for intermittent claudication, which had been present in 35 before operation. Twenty-four said that they could walk farther before onset of claudication than they could preoperatively, and in none did claudication occur in a shorter distance than preoperatively. Nine of the 24 who had improvement in this respect could walk at least 400 yards farther than before.

Of 17 patients who had had bilateral sympathectomy, presumably including the first lumbar ganglion, 15 observed no change in sexual activity, although most had not been sexually active for years. One was unable to ejaculate (relaxation of sphincter action probably caused intravesical discharge of the ejaculate). Only one reported increase of libido and of ability to maintain erection.

One 70-year-old patient had early gangrene of the right forefoot; after sympathectomy a transmetatarsal amputation was performed and the stump did not heal. Ten days later an elective amputation at the calf was done and the stump healed readily. The patient is one of the few with amputation for vascular disease who successfully wears a prosthesis.

One patient, a Demerol addict for two years before operation, had no noticeable improvement, either objective or subjective, when discharged two weeks after right lumbar sympathectomy. Symptoms were severe coldness and pain on rest. The patient was cured of addiction, but because of persistent pain the sympathectomized limb was amputated above the condyle.

In the opinion of 34 patients, the operation was well worth while. Two said it was "no good" and that they would not submit to it again, one because of severe postoperative neuritis and one because no improvement was apparent.

Comparison of preoperative prognosis and postoperative results is shown in Table 1. Result was classified as *good* when pain was absent and activity unrestricted; *fair* when pain was absent but activity was restricted yet sufficient to let the patient care for his ordinary needs; *poor* when pain was present and the patient needed help in caring for himself. It should be added that of 19 patients with good result, 13 were able to work after the operation.

Prognosis was based primarily on rise of temperature on sympathetic block; and as Table 1 indicates, results were better than predicted in most cases. In nine patients with high vasomotor tone, as manifested by cool, moist feet, both prognosis and results were good. Good results were also correlated with preoperative arteriographic observation of short segmental obstruction of the superficial femoral or popliteal artery with moderately good collateral circulation.

COMMENT

Admittedly, lack of controls limits the value of this report; yet the author knows of no series of sympathectomies for which there were matching cases, conservatively treated, that could be observed for comparison. Such a series would be valuable. Clinical impressions are of some value when sufficiently contrasting; in the author's experience the many patients treated conservatively in the same period did not have significant improvement in ability to walk without claudication. In a moderate number amputation was required owing to pain or gangrene, and in general symptoms seemed more severe.

Twelve patients with unilateral sympathectomy of the more seriously affected limb were, in a manner, their own controls. These patients, six months to

four years after operation, requested sympathectomy for the other limb since they had had an arrest of progression or relief of symptoms following the first operation. Another point of evidence, in still other cases, was that after operation there was arrest or improvement of arterial insufficiency which had grown progressively worse under conservative management.

It has been advocated that sympathectomy should always be bilateral. However, the high incidence of annoying neuritis and the possibility of complications in older patients seems to make a definite indication desirable. In 60 per cent of the cases here presented, one limb was much less affected; in such patients operation on the alternate side can be done later if warranted.

Since good results sometimes occur even when not prognosticated by preoperative tests (Table 1) and since the operative mortality is only 1.6 per cent, it would seem that most patients with progressive arteriosclerosis obliterans should be offered sympathectomy.

Although there is no evidence that smoking is an etiologic factor in arteriosclerosis obliterans, it should perhaps be noted that every patient in the series had smoked heavily for at least 20 years and in most cases for 35 to 40 years.

In most cases resection included the first, second and third lumbar ganglions; in 12 cases it was extended to the fourth. No difference was noted in these 12.

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Medical Technicians

The Present Need and Training in California

RAMONA GREEFKENS and JAMES HOPPER, JR., M.D., San Francisco

THE SHORTAGE of medical laboratory technicians is still critical, although the present survey of clinical laboratories in California shows that the scarcity has slightly lessened within the past few years.

Five years ago a survey was made to determine the need for laboratory technicians throughout the state.[1] It showed a 14.5 per cent deficit of technicians at that time. Because of the continued shortage of properly trained technicians, and the interest displayed by the medical profession in the last survey, it was felt that a second survey should be made. It was also thought that it would be of value to consider the future outlook by surveying the apprenticeships available for student technicians. Accordingly, another survey was conducted in an effort to reveal the reason for, and the extent of, the shortage of technicians.

On April 30, 1953, questionnaires were sent to 700 laboratory directors in California. Of the 432 answers received, 176 were from directors of hospital laboratories, 198 from directors of private clinical laboratories, and 58 from doctors having laboratories in their offices. Following are the questions and a summary of the answers:

1. Q: What is the number of licensed technicians or technologists in your laboratory?
   A: 1,486 technicians were employed in the 432 laboratories.

2. Q: What is the number of current vacancies in your laboratory?
   A: 210 vacancies in the 432 laboratories (a shortage of 12.4 per cent).

3. Q: What is your average yearly turnover of technicians?
   A: Approximately one-third of the total number of technicians employed.

4. Q: Are licensed technicians easily obtained?

	No	*Yes*	*No Answer*
A:	343 (79%)	63 (15%)	26 (6%)

5. Q: What is the quality of available technicians?

Number of Laboratories	*Answer*
46	Excellent
164	Good
149	Fair
24	Poor
5	No technicians available
7	Variable
37	No answer

6. a) Q: What is the number of apprentices or trainees in your laboratory?
   A: 313 trainees in the 432 laboratories.

   b) Q: What was the previous education of trainees?

Number of Trainees	*Years of College*
49	0
14	1
67	2
27	3
156	4 or more

Major in College:		*College Degree:*	
Science	Non-Science	Yes	No
172 (55%)	141 (45%)	154 (49%)	159 (51%)

   c) Q: Do trainees receive maintenance in any form?

	Salary	*Meals and Room*	*No Maintenance*
A:	258 (82%)	10 (3%)	45 (15%)

The survey revealed a 12.4 per cent shortage of technicians in the 432 laboratories. It also showed a ratio of one student to five technicians, and a yearly turnover of approximately one-third of all technicians employed. Thus, there are not enough students to replace the yearly loss of technicians. Since the majority of technicians are women of marriageable age, the turnover is understandable; the small number of students is not. Medical technology has become a more recognized field, as evidenced by the increasing number of colleges which offer this subject as a major course of study. The program generally includes three years of college work, with emphasis on chemistry and biology, and a fourth year of hospital apprenticeship. This training leads to a degree of bachelor of science in medical technology. The University of California School of Medicine, recognizing the need for such a program, has changed the requirements for admission to the Curriculum in Medical Technology in order to include students enrolled in these four-year courses (see Appendix I). Of the 313 apprentices in the laboratories covered by the survey, 7 per cent were completing requirements for a degree on this type of program.

One of the main reasons for the shortage of technicians is the scarcity of available apprenticeships (only 37 per cent of the laboratories offered apprenticeships). Students who have obtained degrees in subjects other than medical technology must spend a year of apprenticeship training in order to qualify for state licensure (see Appendix II) and national registration (see Appendix III). Not only are they

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hindered by a scarcity of available apprenticeships, but economic conditions at the present time may prevent most of them from spending a fifth year in training without maintenance in any form.

According to our survey, however, the status of student technicians has improved within the past few years. Of the 313 students who obtained apprenticeships, 82 per cent received a salary, 3 per cent received meals and room; approximately 15 per cent received no compensation. Although no question was asked concerning the amount of the salaries paid to the students, some of the laboratory directors supplied this information. The salaries paid to students ranged from $50 to $256 a month, with an average of approximately $175 a month.

An additional reason for the shortage of technicians is the high qualifications which laboratory directors demand of technicians today. Once satisfied with technicians who had a minimum of scientific education and experience, they now seek personnel with college background who have had training in all phases of laboratory work. This change is shown not only in the survey, where the average laboratory director rated the quality of the majority of technicians as only fair to good, but also in the comments of the directors concerning the type of technicians available today. One of the most common criticisms offered by the directors concerned the large number of poorly qualified, unlicensed technicians working in doctors' offices. The observations of the laboratory directors are verified to some extent by the survey which reveals that of the 313 students, 55 per cent were science majors, 12 per cent had some college science, and 33 per cent had taken no science courses whatever; furthermore, only 49 per cent had a college degree. The situation seems to present a paradox: While maintenance of high educational standards is desirable in principle, in practice it apparently has aggravated the shortage of technicians. Moreover, with highly educated and trained personnel go higher salaries and, to cover this, increased fees which lessen the availability of laboratory tests for the average patient. (It should be noted here that statistics* show the price index for medical care in San Francisco had risen from 100.5 in 1948 to 118.4 in 1952, and by September of 1953 to 122.6.)

At the time of the last survey, insufficient remuneration was believed to be one of the reasons for the shortage of technicians. Although this may still be a cause, it does not seem to be so important a factor now as it was. A survey conducted jointly by the Bay Area Salary Committee and the United States Bureau of Labor Statistics showed that the interquartile range† of salaries of clinical laboratory technicians in 1953 was $300 to $335 (weighted average $317), whereas in 1948 the results of a similar survey showed the interquartile range to be $200 to $244 (weighted average $234). During the same period, statistics* show, in San Francisco the consumer price index for all items rose from 102.3 in 1948 to 116.9 in 1953. Thus, salaries for technicians have risen more than the cost of living in San Francisco. It is notable, however, that Montgomery[2] reported in a recent article that in private industries newly graduated scientists are offered starting salaries of about $375 a month. Since employers in fields other than medicine apparently are in a position to offer higher wages than employers in the medical field, science graduates are likely to be lured into non-medical technical positions. In addition, recruitment of these students is carried out on a large competitive scale by commercial companies.

What, then, are the main reasons for the shortage of technicians and what can be done to solve the problem? The following reasons are indicated by the results of both of our surveys:

1. *The small number of students in the field.*

This lack could be partly remedied by promoting interest in the field of medical technology by means of pamphlets distributed to schools, radio spot announcements, and use of advertising cards in the city trolley cars and buses. Some of these suggestions are being carried out by the Committee on Public Relations of the California Association of Medical Laboratory Technicians. This is in addition to the technician recruitment program on a national scale launched this year by the American Society of Clinical Pathologists, the College of American Pathologists and the American Society of Medical Technologists with grants and support from the American Cancer Society and the U. S. Public Health Service (National Cancer Institute). Still it would seem to be a responsibility of county medical societies and similar groups to stimulate recruitment of students into this necessary ancillary branch of medicine.

2. *The expense of four years of college work plus one year of unpaid apprenticeship.*

This problem could be solved by (a) establishing more four-year programs with an apprenticeship included in the fourth year, and (b) by supplying paid apprenticeships to students who have already completed their college work.

3. *The scarcity of available apprenticeships.*

This obviously requires the cooperation of laboratory directors and hospital administrators in offering facilities and planned programs of apprenticeship training to student technicians.

*United States Department of Labor, Bureau of Labor Statistics.

†The range of rates received by the middle 50 per cent of the employees. The weighted average (mean) is obtained by dividing the sum of all rates of all employees by the total number of employees.

APPENDICES

I. *Requirements for Admission to the Curriculum in Medical Technology, University of California School of Medicine:*

Applicants must have either of the following:

1. Bachelor's Degree.

Applicants for admission on this basis must hold a bachelor's degree with a major in one of the biological sciences. Courses taken in preparation for the major must have included Bacteriology 101, Biochemistry 102 or 100A-100B, and Biochemistry 101A-101B, or their equivalent.

2. Three years of college training.

Applicants for admission on this basis must have completed three years of a regulation curriculum in medical or clinical laboratory technique. This curriculum must have included courses in biochemistry and advanced bacteriology. Applicants will not be considered unless the college they attended shall grant a bachelor's degree to them upon satisfactory completion of the four-year curriculum.

II. *Prerequisites for Entrance into the Examination for California State Licensure:*

1. Completion of a regular four-year college or university curriculum in medical or clinical laboratory technique, with a degree of bachelor of arts or bachelor of science in a college or university approved by the department (State Department of Public Health), the last year of which course shall have been primarily clinical laboratory procedure; provided, however, that if the curriculum did not include practical clinical laboratory work, six months as a clinical laboratory technician trainee or the equivalent, as determined by the department, in a clinical laboratory approved by the department shall be required; or

2. Graduation from a college or university maintaining standards equivalent, as determined by the department, to those institutions accredited by the American Association of Universities with a degree of bachelor of arts or bachelor of science and a major in bacteriology, biochemistry, or essentially equivalent subject or subjects, as may be determined by the department, plus one year as a clinical laboratory technician trainee or the equivalent as determined by the department in a clinical laboratory approved by the department. One year of practical experience in a public health laboratory may be accepted if such experience or if university or college courses included practical work in clinical biochemistry and hematology; or

3. Graduation from high school or the equivalent as determined by the department, with a minimum of five years' experience as a clinical laboratory technician trainee or the equivalent as determined by the department, doing clinical laboratory work embracing the various fields of clinical laboratory activity in a clinical laboratory approved by the department, except that university or college work which includes courses in the fundamental sciences may be substituted for such experience to a maximum of four years in the ratio of 30 semester hours or equivalent quarter hours for each year of experience, and further, except, that time spent in a school approved by the department shall count as acceptable experience on a month-for-month basis.

III. *Requirements for Admittance to the Examination of the Registry of Medical Technologists of the American Society of Clinical Pathologists:*

Two years (60 semester hours) of college work in any college or university accredited by a recognized standardizing association. During the two years the following courses must be taken: Biology: 12 semester hours, which may include general biology, zoology, bacteriology, parasitology, anatomy, histology, or embryology. Chemistry: One year of inorganic chemistry (6 semester hours) including lectures and laboratory; and 3 semester hours of quantitative analysis, organic chemistry or biochemistry, including lectures and laboratory.

Electives: Sufficient to give a total of 60 semester hours of college credit; *plus*, instruction in medical technology for at least 12 consecutive months in a school of medical technology approved by the Council on Medical Education and Hospitals of the American Medical Association.

IV. *Curriculum in Medical Technology—University of California School of Medicine:*

The University of California School of Medicine offers a training program to students preparing to be medical laboratory technicians. The curriculum is given as a practical apprenticeship. It consists of one year of full-time work, and covers training in biochemistry, medical bacteriology, clinical pathology, parasitology, mycology, blood bank procedures, serology, histologic technique, basal metabolism, and electrocardiography. The laboratory work is done by the students under the supervision and instruction of the graduate technicians and certain faculty members of the School of Medicine. The students are assigned to a rotating service in the various clinical and teaching laboratories of the University of California Hospital, the School of Medicine, and associated institutions.

Graduates are eligible to take the California state examination and the National Registry examination.

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Psychological Aspects of Atomic Disaster

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• *Increasing attention to the psychological aspects of atomic disaster will help improve the ability of the citizens of this country to withstand attack and survive as a free people. Since an enemy may be expected to exploit any internal weaknesses it can find, preparation must be made against the onslaught. The ability to deal effectively with any situation, even the most awesome, depends on knowledge of what to expect, and there is no reason to believe that facts about atomic disaster are an exception to this time proven truth.*

The psychological aspects need to be considered from two points of view, namely, the effect on masses of people and on individuals.

THE PSYCHOLOGICAL, emotional and spiritual resources of our country are going to be of critical importance to our very survival should atomic war reach us. The efforts put forward during the late war toward keeping morale high on the home front in order to produce sufficient material for fighting forces will seem as nothing against the tasks to be expected. Any discussion of the psychological aspects of atomic warfare as well as bacteriological and chemical warfare must include the maintenance of an effective level of common purpose and state of mind which maintains a will to resist the enemy. Secondly, such a discussion must concern itself with the expeditious handling of psychiatric casualties as they occur.

Psychiatrists, along with practitioners in other fields of medicine, stand ready to bring the accumulation of psychiatric knowledge to bear upon the peculiar problems of total warfare. Clinical entities come into being which are almost never seen in civilian life. Psychiatry is predominantly a clinical science, and fortunately clinics have not been filled to date with the kind of reactions to be anticipated in the event of a bombing. Consequently the writings of others who have reported experiences such as those to be expected must be turned to. The best organized reports of experience concerning men under this kind of stress came from the armed forces of the United States during World War II. Also available are observations of civil populations in other countries during the late war, as well as data from disasters that have affected our own population.

PANIC

Panic is a sudden, overpowering fright that removes all reason and the ability to take effective action. This terror is frequently brought about by a misinterpretation of dangers, especially when it is accompanied by frantic attempts to secure safety. It can occur in the presence of real or imminent danger, but it also occurs when real danger is very slight. In a person it is a reaction to an unbearable situation to which the person is unable to adjust temporarily. In a group it is usually precipitated by mass suggestion and is highly contagious. Thus, panic involves temporary major disorganization of thinking, loss of control over fear and loss of purposeful action.

There are many sad examples of the tragedies brought about by panic far out of proportion to the external events that started them — the Iroquois Theater fire in Chicago in 1903 and the Cocoanut Grove disaster in Boston in which apparently possible escape routes were passed up in mad stampede to jammed exits; the trampling to death of many persons in disaster shelters in Europe during World War II; and the most terrible needless loss of 5,000 lives in a Chungking bomb shelter during the Sino-Japanese war.

It has been estimated that if Manhattan Island were to be bombed and a rumor got started that the Battery was the safest place to be, thousands upon thousands could be pushed into the water by the pressure of masses of people trying to reach the spot. When panic seizes groups of people, no effective action is taken by them, and the best that can be hoped for is that there will be no deaths beyond those that occurred in whatever event started the panic. It is easy to visualize that if panic came quickly during atomic attack, numbers of people might unnecessarily expose themselves to flying debris and radiation which could easily have been avoided by waiting for even short periods before leaving shelter.

Of even greater potential danger, perhaps, is the possibility of the outbreak of mob rule and plundering, and lack of attention to care of the wounded. Then there would be the enormous job of reestab-

Read at a meeting of the California Office of Civil Defense concerned with Radiological Problems of Medical Officers in Civil Defense, October 1, 1953.

lishing order so that the affected area might contribute to a war effort. Scapegoating also must be expected as an exploit by the enemy's psychological warfare arm—for example, an attempt to disunify the civil populace by spreading rumors that the wealthy conspired to cut short protection against disaster.

PANIC PREVENTION

Necessity for Preparation

By far the most effective steps to prevent panic are those that can be taken now, not after an attack has come. There are those who maintain that full public information on the possible effects of atomic attack would cause so much fright in the populace as to be dangerous in itself, but that position is untenable in the light of recent history.

For instance, in 1938 Barcelona was bombed for a total of 26 minutes by six airplanes and although damage was slight, a million and a half dwellers in the city whirled in panic for 40 hours. This may seem almost comical now, 15 years and several wars later, but it illustrates that people frightened by the unknown can conjure a disaster far worse than any real circumstances warrant. Terrible as the atom bomb is, and realistic as fears of it may be, it is probable that unless the public were adequately prepared, the terror and fear would exceed the facts in the event of attack. Part of the preparation must be public enlightenment concerning the effects and limitations of atomic warfare. Certainly the people should be well acquainted with the fact that there is an overall medical plan and that supplies will be made available. The knowledge that aid is available reduces the feeling of helplessness that produces panic.

Communications

The establishment of communications as soon as possible following the disaster is recognized as being of psychological as well as of practical importance. There will be some radio facilities and use may be made of sound trucks, or some sound equipped helicopters for the most urgent of information to be directed to certain groups within the area. People will not be willing to take chances unless they know that there is a chance of success and they have some idea of where they stand. To prevent panic, the press and radio broadcasters should be deeply impressed with the fact that this is one time that sensationalism can be ruinous to the local effort, to say nothing of the effect it may have in un-bombed areas which might be anticipating attack. Rumors will most certainly get started, rumors such as that all the water is polluted with radioactive material, or that the enemy has landed nearby. Someone has suggested the setting up of an actual rumor clinic to deal with these and much of the necessity for adequate communications will be to "nail" rumors as quickly as possible.

Need for Authority

When the myth of invulnerability, which so many people harbor, has been rudely shattered by a bomb, people will be looking for protective kindly authority. In all installations, whether medical or other, this should be fully appreciated. Just as the masses are subject to "hysterical" following of mass "fear leaders," so can they be guided into imitating admirable qualities. Where leadership is strong, people are more able to control their fears and imitate the seemingly more fearless.

Need for Group Cohesion

After the initial confusion following explosion there will be a great need for a feeling of being together on the part of the people. Obviously, good leadership as everywhere will be of inestimable value. But no group activity can be as valuable in reducing panic and subjective sensations of fear as constructive action. The work of clearing roads for the passage of vehicles or of joining in bucket brigades and the like is necessary. Whenever a job is assigned, it should be assigned to two or more people, even though one might accomplish it, in order to avoid the helpless feeling of being alone in the midst of devastation. The problem in child care will depend largely on the emotional state of the adults about them. It was found in England during the late war that the incidence of common symptoms of insecurity was greater in children who had been removed from their families in London to safe places than it was in children who remained in an area of danger with their parents. Certainly children should be encouraged to help with the work if they are old enough to do so, and nothing will help them to overcome their anxiety more than feeling useful and doing something to reduce tension. Teachers certainly could help in taking care of large groups of children by organizing games or group singing, or even by carrying on makeshift school work.

Evacuation

Evacuation following detonation of atom bombs will have to be planned in order to prevent panicky clogging of all avenues. Public foreknowledge that there is a plan is a prime factor in the successful use of it. The exercise of strong authority is necessary, for military experience has repeatedly demonstrated that retreat can turn into disorganized rout. In the event that large numbers attempt to flee in a disorganized way, certain steps can be taken to bring order. Mobilization depots stocked with food and water can be set up along the routes of egress. As people become fatigued by their attempts to escape they will stop at the depots. There, good leaders with

public address systems can give an accurate account of the nature and extent of the damage. The able bodied persons can be regrouped to return as working parties, or to return to their own areas, depending on the circumstances.

Disaster Workers

The horror engendered by the sight of mass suffering, mutilated bodies and the like is likely to demoralize many of the disaster workers. As yet we do not know enough of what to expect to be able to state positively what qualities are needed for them. Suggestions have been made, however, that they be given an indoctrination course, similar to that given to combat soldiers, in which realistic sound films, approximating as closely as possible the kind of things they may witness, are shown. Since the sight of death and disfigurement around disaster stations and hospitals might undermine morale, it has been suggested that persons certain to die should be kept apart in "death wards."

INDIVIDUAL REACTIONS

In the initial period following the detonation of atom bombs people will be, in various degrees, anxious, fearful, doubt-ridden, apathetic, hysterical, moody, irritable and depressed. Dr. William Menninger compiled observations from all the psychiatrists who took part in relief operations during the Topeka flood of July 10, 1951. It was noted that there was a striking difference between the reaction of those suffering personal damage and those who did not. Those who did not were more obviously anxious and felt relief and even exhilaration on doing something constructive. On the other hand those who did suffer property damage could have saved themselves much of it. Despite adequate warning which came in time there was a reaction of *disbelief*. Indeed, of 10,000 who were forced to evacuate their homes, 3,000 had to be rescued by boat. These people who suffered damage were apathetic and not interested in combating further damage such as saving the water and sewer systems. As their apathy wore off they felt a great need to talk and experienced relief from it. Their anxiety most often was directed at trivial matters such as getting proper food for the dog, or that grandfather would miss a certain radio program. It was as if these people could not yet face squarely their loss and displaced their concern on to matters of little importance. Physicians can expect much of this during disaster which will take the form of concern over minor cuts and bruises, etc. Much time in disaster stations could be saved and relief given by having such persons as ministers assigned for the purpose of letting these people "talk out" some of their anxiety.

Individual psychic distress beyond normal initial reaction of fear probably will not be too apparent in the earliest postdetonation phase. It will occur, however, and is one of the things that physicians must watch for.

Causes

When attack with its destruction and loss of life comes, a natural reaction is to fight back and retaliate. This externalizing of aggressive action is a healthy one under justifiable circumstances because it diverts large quantities of psychic energy from oneself to useful work. Timid passive persons are more vulnerable to fear because they are unable to discharge dammed-up tension by aggressive action. Consequently anxiety tends to build up and become uncontrollable. Conscientious men and women will certainly not be immune to psychiatric breakdown. A person with an overly stern conscience may unnecessarily punish himself for even the unavoidable disastrous episodes which will be common in attack. Such a person should be watched for depressive symptoms and even suicidal tendencies. This kind of reaction might well be seen among parents, wardens, disaster workers and others when they feel their efforts have not been sufficient to save neighbors or family members. At the opposite end of the spectrum of conscience are persons who have so little compelling force of conscience that they will permit themselves to be overcome by fear rather than "carry on." Friendly firmness may be adequate to cope with some of them, but others will have such disabling symptoms as fugue states, paralysis, vomiting and mutism. It is quite conceivable that, in the first turmoil after attack, anxiety ridden incoherent vomiters might be mistakenly thought to be suffering from large doses of radiation.

There is one aspect of combat fatigue, familiar from World War II, that has important implications for civil defense. Combat fatigue was not entirely a problem within a given person, as was shown by the relative incidence of casualties in different units subject to comparable stress. It was repeatedly found that certain units within a battalion, regiment or division ran consistently higher or lower casualty rates than their neighboring units. As the distribution of vulnerable persons was similar in all organizations, the disproportionate incidence of psychiatric breakdown could not be attributed to disparities in that respect. The only tenable explanation was that the difference was owing to the influence of the group or combat unit which could offer realistic protection against external fear. The soldier did not fight alone. He had his buddies by him who shared his dangers and privations, and who he knew would help him if he were disabled. The more confidence he had in his platoon or company the less fearful

was the battle situation. But in civilian population this sort of support is more difficult to achieve. To bring it about, people must be organized into close units and trained to meet disaster. Unless a close working together of the smallest units in a community is fostered, the feeling of helpless isolation and inability to cope with the situation will add to the already heavy emotional burden all must bear. This in turn will increase the incidence of mental breakdown.

It seems clear that transient breakdown of the personality under stress depends on much more than an individual's capacity to stand fear and the realistic danger in which he finds himself. Group identification begins for a soldier in training, and it is here that the two important life-sustaining qualities should emerge. It is here that he gains confidence in the use of his weapons, and it is here that he learns the value of teamwork in battle. Thus the foundation for his own safety lies in the protective functioning of the unit. The life of the group *is* his personal life. It was frequently seen during the last war that even a timid soldier came to feel more secure by being in a powerful group, and often assumed the aggressive attitude of the whole organization. A leader sets the standard and motivation for his organization by example and behavior. The poor leader is quickly recognized by his men for inept management and unfair treatment, and a higher proportion of emotional casualties is to be expected in his command. In preparation for civil disaster, unless capable leaders are provided down to the very smallest grass roots, there will be a feeling of utter helplessness on the part of many. Adequate preparation and selection of suitable leaders is the outstanding epidemiological consideration in the problem of dealing with disaster.

HANDLING NEUROPSYCHIATRIC CASUALTIES

It is, of course, impossible to predict with any supposition of accuracy what the total psychiatric reactions would amount to. It would appear that in the beginning the vast majority of people will experience some panic, bewilderment and numbness which prevents them from taking in all the implications of what they have been through. These reactions will be recognized for what they are by all physicians and for the most part they are not to be considered a medical problem. Such symptoms as unwarranted aggressiveness, flight and fury will be dealt with by civilian or military authorities. No doubt many people will be concerned about how much radiation they have received, and may have all kinds of somatic symptoms that are connected in their minds with the effects of a presumed overdose of radiation. These reactions can be dealt with quite effectively by any physician. There will, of course, be the anxious, hypochondriacal people to whom all reassurance is futile. In all probability these people will simply have to be turned away. There may be some bizarre syndromes such as the precipitation of psychoses, severe depression and the like. Some persons with such reactions, unless they become violent, could be watched carefully by family or friends. It was by no means rare during World War II to see persons who were considered schizophrenic, owing to the severity of personality disorganization, emerge completely from the psychotic-like state within days or even a few hours. The phenomenon was sometimes given the name "three-day schizophrenia." In disaster, evacuation of persons so affected would have to be through medical channels.

After the worst of the initial confusion has passed, some persons will be observed to have been psychically damaged to a degree greater than any ascribable to normal reaction to fear. It is then that the services of a psychiatrist will be most useful. Within any given community floating teams of psychiatric personnel could be organized. Ambulances or trucks could be assigned for this purpose. The personnel could consist of a psychiatrist, a driver and two or three attendants. Syringes and sedatives would be needed for the transport of very excited patients. These teams should have access to a special neuropsychiatric center outside the immediate disaster area. Here patients would be retained who could be effectively treated in a short period of time by such methods as heavy sedation and group psychotherapy. All efforts should be directed toward getting back to work as quickly as possible. It might even be that work parties could be organized among recovered patients at such a center. Patients who could not be expected to respond to short-term therapy, say two or three days, would have to be further evacuated to a more permanent kind of installation, perhaps even augmented units attached to state hospitals.

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CASE REPORTS

- **Cortisone, Corticotropin and Procaine in the Treatment of Corrosive Esophagitis**
- **Anaphylactic Reaction to Penicillin O**
- **Thrombotic Thrombocytopenic Purpura**
- **Nasal Myiasis**

Cortisone, Corticotropin and Procaine in the Treatment of Corrosive Esophagitis

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THE ACCIDENTAL or intentional ingestion of corrosive chemical agents frequently causes scarring and incapacitating stricture of the esophagus.

The site of stenosis is determined by development of segmental spasm, usually localized in one segment or another of the organ. The effects are inconsequential if only the epithelium is destroyed, but they may be severe if the submucosa or the muscular layer is involved, for the resultant healing by granulation tissue leads to progressive narrowing of the lumen of the esophagus by stricture formation, which usually becomes manifest in from one to three months after injury.

Measures to dilute and neutralize swallowed corrosive chemicals are of first importance in early therapy, and administration of local anesthetic agents may help diminish intense dysphagia.[3] Efforts directed toward retarding and lessening the development of cicatrization by use of antibiotics and steroid hormones are in order in light of good results reported in the treatment of experimental corrosive esophagitis in rabbits when these agents were used.[2] It has been demonstrated that the inhibiting effect of cortisone on granulation tissue does not interfere with the process of epithelization.[1, 4]

In a previously reported case, benefit was noted from administration of corticotropin (ACTH) and procaine by mouth early in the course of esophagitis caused by the ingestion of Lysol.[3] Herein is another case in which cortisone was given intramuscularly and procaine by mouth to a patient with corrosive esophagitis due to ingestion of lye crystals. At autopsy later there was evidence that the therapy was effective in preventing the usual late cicatricial sequelae.

REPORTS OF CASES

A 74-year-old man was admitted to the Long Beach Veterans Administration Hospital four hours after having ingested an unknown quantity of lye crystals in an attempt to kill himself. He had vomited bloody material soon after swallowing the lye and some two hours later had been given vinegar to drink, according to a son, who said also that the patient had been deteriorating mentally for several years and thrice before had attempted suicide.

At the time of admittance the patient was acutely ill, confused, disoriented and vomiting. He was unable to speak above a whisper and complained of difficulty in swallowing. The blood pressure was 150/80, the pulse rate 100 and the temperature 99.2° F. The lips and tongue and the palatal, buccal and pharyngeal mucosa were swollen, reddened and ulcerated. There was diffuse tenderness in the epigastrium.

A total of 16 ounces of half strength vinegar solution was administered orally during the first two hours of hospitalization. Penicillin, 300,000 units, in combination with Streptomycin, 0.5 gm., was given parenterally and continued at 12 hourly intervals. Parenteral hydration was carried out for three days and no food was given by mouth. Administration of 1 per cent procaine solution in doses of 15 cc. every two hours and 100 mg. of cortisone daily, given intramuscularly in divided doses, was begun on the second day. Procaine therapy was continued for one week and cortisone for 15 days.

Restraint of the patient was necessary, owing to confusion, restlessness, delusions and disorientation. These symptoms were present before cortisone administration was started and, except for occasional short periods during which the patient was oriented and cooperative and would exclaim, "What a fool I was," they continued throughout the period of hospitalization. As the patient did not urinate, a catheter was kept in place.

The oral and pharyngeal edema, ulceration and inflammation increased during the first three days, then gradually subsided. Epithelization of the lesions and complete healing took approximately 20 days. By the eighth hospital day the patient was swallowing liquids well but refused to eat and was fed by tube. During the first few days of tube feeding, creamy purulent exudate was present in the gastric aspirate, at first in moderate amounts and later in

From the Medical Service, Gastrointestinal Section, Veterans Administration Hospital, Long Beach.

diminishing quantity. Fever, present generally but intermittently throughout the period of hospitalization, was attributed to bronchopneumonia and pyelonephritis. The penicillin-streptomycin combination originally instituted was changed to aureomycin, 500 mg. every six hours; and later, because of onset of diarrhea, terramycin, 250 mg. every six hours, was substituted. No recurrence of fever was noted after the twentieth hospital day. Upon advice of a psychiatrist that the patient was still suicidal and acutely psychotic, he was committed to a state mental hospital, where he died three weeks later. No pathologic change was noted in careful postmortem examination of the mouth, larynx, pharynx, esophagus and stomach. The mediastinum and pleural cavities were normal. The pathologic diagnosis was bilateral bronchopneumonia and cerebral arteriosclerosis with cortical atrophy.

(The previously mentioned and previously reported[3] case of damage to the esophagus by Lysol was that of a man 40 years of age who was admitted to the Long Beach Veterans Administration Hospital six hours after the ingestion of two ounces of the caustic material in a suicidal attempt. Vomiting ensued and emergency treatment consisted of gastric aspiration. The body temperature was 101° F. at the time of admittance. The tongue and buccal mucosa were inflamed and there was a grayish membrane in the oropharynx. Corticotropin (ACTH) was given intravenously, 10 mg. daily in divided doses over a period of 18 hours with aureomycin 1.0 gm. daily for 17 days. On the third hospital day the patient was given 15 cc. of 1 per cent procaine solution to gargle and swallow after each meal. The following day a bland diet preceded by procaine swallows was well tolerated. Esophagram was normal one week following completion of therapy and the patient was followed for five months following discharge during which time he continued well.)

DISCUSSION

In neither of two cases in which therapy with cortisone or corticotropin and procaine by mouth was given to patients who had swallowed strong corrosive chemicals was there evidence of esophageal stricture. Of course there is no way of knowing in any given case whether or not esophageal strictures will result from the swallowing of corrosive chemicals. Moreover, it is possible that concentrated solutions may, upon contact with the lining of the oral and pharyngeal cavities, cause such powerful spasms of the pharyngeal muscles as to prevent the swallowing of the chemical. However, it was very strongly indicated by the symptoms — hematemesis, epigastric tenderness, severe dysphagia, purulent exudate in the stomach—that esophagitis did occur in one case at least and that the esophageal changes were similar to those noted in the buccal and pharyngeal mucosa. It may be conjectured that the administration of the steroid hormones, coupled with the use of antibiotics to reduce secondary infection, was responsible for sufficiently suppressing granulation tissue formation to avert the formation of stricture in these two cases. In any event, these results are sufficiently encouraging to warrant further trial of this form of therapy in cases of corrosive esophagitis.

SUMMARY

Two suicidal patients suffering from the corrosive effects resulting from the ingestion of strong chemicals were treated with cortisone or corticotropin, antibiotics and procaine solution. Treatment was begun early in the course of the disease. Esophageal stricture did not result.

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Anaphylactic Reaction to Penicillin O

HENRY BRAINERD, M.D., KAHN UYEYAMA, M.D., and ELENORE ERICKSON, M.D., San Francisco

IMMEDIATE ANAPHYLACTIC REACTIONS to penicillin G have been reported with increasing frequency. In several cases such reactions have caused death. It is likely that such untoward accidents are more common than published reports would indicate. The literature on the subject of anaphylaxis to penicillin was recently adequately reviewed by Feinberg, Feinberg and Moran.[1] In most instances a history of allergic disease was obtainable, penicillin had been given previously, often followed by untoward reaction, and the immediate reaction to intradermal test with dilute penicillin solution was positive.

Allylmercaptomethyl penicillin (penicillin O) has been described as "anti-allergic." Patients in whom allergic phenomena developed after administration of penicillin G, later received penicillin O without ill effect.[2, 3] While this observation may be generally true, one of the authors (H.B.) has observed unequivocal evidence of cross sensitivity of the delayed type. Feinberg and co-workers[1] demonstrated cross-antigenicity between penicillin O and penicillin G and predicted that penicillin O might be anaphylactogenic. The following case report is submitted to warn physicians against relying implicitly on the "anti-allergic" properties of penicillin O in the management of patients sensitive to penicillin G.

From the Department of Medicine and the Student Health Service, University of California School of Medicine, San Francisco.

CASE REPORT

A 23-year-old medical student who had rheumatoid spondylitis had been given a series of injections of penicillin-procaine intramuscularly on several occasions. He had received 300,000 units daily from January 3, 1950, to January 16, 1950, and from February 16, 1950, to March 2, 1950. The only untoward reaction at this time was mild local induration at the injection sites. He again received intramuscular injections of 300,000 units of penicillin-procaine daily from September 22 to September 24, 1950, and from October 31 to November 2, 1950. On June 3, 1952, a course of 1,000,000 units of penicillin-procaine daily was begun. After the injection on June 5 the patient noticed an immediate mild reaction, which consisted of mild nausea and excessive salivation. Penicillin was discontinued at this time. On June 10, coincident with administration of diphenhydramine by mouth, generalized pruritic, macular rash developed and then faded in two days.

Because an aortic systolic murmur had been noted previously, it was decided to administer penicillin prophylactically in preparation for removal of chronically infected tonsils. Accordingly, an aqueous solution containing 600,000 units of penicillin O was administered intramuscularly on June 17. Approximately three minutes after the injection the patient felt a sensation of tingling throughout his entire body. At the same time he had an urge to defecate, felt substernal oppression, and noted increasing dyspnea and a copious flow of saliva, which drooled to the floor. Within about two minutes his vision became blurred, and he lost consciousness. Upon examination the patient was observed to be diffusely flushed, sweating, and breathing with obvious difficulty. He was drooling large amounts of tenacious mucoid material. Breath sounds were distant, and no wheezing was observed. Radial pulsation could not be felt and the blood pressure was unobtainable, although the heart sounds were not abnormal. Epinephrine, 0.5 ml., was administered subcutaneously and repeated twice at intervals of 10 minutes. Diphenhydramine, 5 mg., was administered intravenously. The status of the patient seemed to improve slightly following the initial dose of epinephrine and diphenhydramine, but the pulse was impalpable until shortly after plasma was given intravenously. At this time the blood pressure rose gradually, and consciousness returned. The patient awoke with a sensation of vise-like retrosternal oppression and dyspnea, especially on inspiration, although respirations at this time appeared only slightly labored. He vomited approximately 1,500 ml. of clear, tenacious mucoid material. The patient then improved rapidly, and when admitted to the University of California Hospital three hours later was essentially asymptomatic. No abnormalities were noted upon physical examination at that time. The blood pressure was 120/80 mm. of mercury. Leukocytes numbered 14,750 per cu. mm. of blood — 78 per cent polymorphonuclear cells, 2 per cent eosinophils, 9 per cent lymphocytes and 11 per cent monocytes. Two days later when the patient was discharged from the hospital as recovered, leukocytes numbered 6,300 per cu. mm. with 35 per cent polymorphonuclear cells, 34 per cent eosinophils, 2 per cent basophils, 22 per cent lymphocytes, and 7 per cent monocytes. The results of urinalysis were normal. No intradermal test for sensitivity to penicillin was carried out because of fear of reaction.

SUMMARY AND CONCLUSIONS

Severe anaphylactic shock due to penicillin O is described in a patient previously sensitized to penicillin G. Accordingly, the possibility of severe cross sensitivity to penicillin O must be considered in patients who have received penicillin G previously.

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Thrombotic Thrombocytopenic Purpura

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EXPERIENCE HAS SHOWN that the repetitious publication of reports concerning unusual disease syndromes has a tendency to elevate the syndrome in the consciousness of physicians. In this way, that which was rare becomes unusual, and that which was unusual becomes relatively commonplace.

It was in 1925 that Moschcowitz[1] recorded observations describing a clinical entity characterized by fever, brownish pallor of the skin with petechiae, anemia, sundry neurological signs and the pathological findings of numerous thrombi in the terminal arterioles and capillaries. No further mention of this unusual clinical picture was made in the literature until 1936 when Baehr, Klemperer and Schifrin[2] published a report which has become a classical reference for the clinical and pathological descriptions of this disease, as well as for the etiological concepts, with special attention to the pathogenesis of the thrombocytopenia which is an outstanding feature of this disease. The decrease in circulating platelets is thought to be brought about by the formation of thrombi, consisting of masses of agglutinated platelets, in capillaries and arterioles throughout the body.

Antemortem diagnosis of this entity, not reported until recently, came about by virtue of the more rapid recognition of the clinical features of throm-

From the Departments of Internal Medicine and Pathology, Santa Clara County Hospital, San Jose.

botic thrombocytopenic purpura. Prodromal symptoms, if there are any, may consist of lassitude and pallor. More often, however, there is no prelude and the sudden onset of the illness is characterized by weakness, headache, pallor and purpura. Fever is a constant finding and may occur at the outset or later. In addition to purpura and pallor, the skin may have a *cafe-au-lait* appearance or there may be a brownish cast to the underlying pallor. Clinical icterus is a frequent observation in the sclera, and hemorrhages and exudates may be noted in the fundi. Rales in the lung fields may reflect small pulmonary hemorrhages such as have been noted by pathologists, but later in the course a failing heart may be the cause of rales. The heart may vary in size from normal to enlarged. Tachycardia commensurate with the degree of fever is a feature of the disease. However, the focal necrosis in the myocardium which is seen later probably contributes to this increase in heart rate. Heart sounds may be poor for the same reason. Systolic apical murmurs, secondary to the progressing anemia, is another frequent finding. Hepatomegaly is not present, but splenomegaly has been noted in about one-third of the reported cases. Hemoptysis, melena and hematuria have been observed rather frequently as further manifestations of the spontaneous bleeding tendency in patients with this disease.

Neurological findings constitute an outstanding feature of thrombotic thrombocytopenic purpura. The depressed conscious state is manifested by irrationality, confusion, delirium, stupor or coma. Furthermore, but in no particular frequency or pattern, the following neurological signs were noted in the reported cases reviewed: nuchal rigidity, generalized convulsions, flaccid paraplegia, partial motor paralysis, hypoactive or absent deep tendon reflexes, agnosia, apraxia, aphasia and varied sensory changes.

From the laboratory studies come the findings that strongly characterize this bleeding diathesis and help to explain the basis for the changes noted on physical examination. Basically, the routine laboratory examinations indicate the presence of thrombocytopenia associated with hemolytic anemia. In addition, there is often moderate leukocytosis, sometimes associated with an increase in the immature forms of the myeloid series, even to the point of leukemoid reaction. In some respects the changes that can be noted by laboratory test are clearly identical to the findings in classical thrombocytopenic purpura: The bleeding time is prolonged, clot retraction is poor, the coagulation time is usually normal, and the reaction to a Rumpel-Leede test is positive. No evidence of arrest of megakaryocytic maturation (such as was noted by Dameshek in cases of hypersplenism and thrombocytopenia) is observable on examination of bone marrow. Indeed, the marrow may be normal, but usually there is an increase in the numbers of megakaryocytes. The increase may be associated with a considerable degree of erythroid hyperplasia resulting from the hemolytic process which is so often present in this disease. In one recent case the diagnosis was made antemortem by examination of paraffin sections of the solid marrow particles which revealed granular thrombi lying within the lumen of the capillaries. Biopsy of skin or muscle tissue may reveal similar granular thrombi lying within the vessels.

The mechanism of the erythrocyte hemolysis in these instances has not been satisfactorily explained. Some investigators feel that it is a purely mechanical phenomenon caused by the extravasation of substantial quantities of blood through the injured or more permeable capillary endothelium; others feel that a hemolysin is involved, possibly related to a state of hypersensitivity. Be that as it may, the evidence for hemolytic anemia is undeniable. There is usually normocytic, normochromic anemia associated with a considerable degree of reticulocytosis. Nucleated erythrocytes are often seen, the number usually increasing as the disease progresses. Spherocytes, variable in number from time to time, may appear late.

Evaluation of the osmotic fragility of the erythrocytes by means of hypotonic saline solutions reveals no increase in cell fragility in most instances, but in those cases where an increase in fragility has been noted it has been related to the appearance and number of spherocytes. No increase in fragility has been seen when heat and acid techniques have been used. Patients with the disease have negative reaction to Coombs' test, and there is low-titred response to tests for auto-, iso- and cold agglutinins. The indirect phase of the serum bilirubin is elevated; and if the urine is not contaminated by blood, the absence of bilirubin and the increased amounts of urobilinogen so common to hemolytic diseases will be noted. Little or no alteration of the results of standard liver function tests has been noted, according to reported cases reviewed.

When specimens of tissue taken from a patient with thrombotic thrombocytopenic purpura are examined, the foundation for the foregoing panorama of symptoms, signs and laboratory findings that characterize thrombotic thrombocytopenic purpura becomes apparent. The most striking microscopic feature is that "thrombi," most of them made up of agglutinated platelets, are to be found in the capillaries and arterioles almost everywhere in the body —in the heart muscle, pancreas, adrenal and pituitary glands, brain, kidneys, intestinal tract, lungs, thyroid gland, liver, spleen, bone marrow, diaphragm and trachea. There is a rather considerable degree of variation of endothelial reaction to the platelet thrombus. In other thrombosed areas, however, there is no endothelial reaction, which has led some investigators to believe that thrombotic thrombocytopenic purpura is not primarily a vascular disease. Many of the thrombi are in the process of organizing when observed, and the inflammatory response to these occlusive lesions is surprisingly mild. It is to this multifocal entrapment of innumerable platelets in the thrombi that thrombocytopenia during life is ascribed.

Not all investigators believe that this thrombus formation is owing merely to a spontaneous agglutination of platelets; and for support the dissidents point to the relative rarity of thrombi in the lung capillaries and liver sinusoids. They feel, on the other hand, that first a vascular lesion is brought about by the swelling of the hyaline material in the vascular wall, that the lesion eventually ruptures and leaves a denuded area of endothelium, and that upon this defect the platelets are deposited in progressively greater numbers, gradually forming a thrombus which further extracts platelets from the passing blood stream.

Transfusions of blood, splenectomy and administration of antibiotics, anticoagulants, cortisone and corticotropin (ACTH) have been used for treatment, but in all known cases the patient died. However, the usefulness of the newer technique of platelet transfusion should be evaluated in this syndrome as well as the response to the calcium complex of Sequestrene, a new and useful anticoagulant.

REPORT OF A CASE

A 25-year-old white man was admitted to the Santa Clara County Hospital August 5, 1951, in a stuporous condition. Six days previously, his wife said, the patient began to feel general malaise, weakness and anorexia. A physician who was called apparently noted jaundice and advised the patient to go to bed. Malaise continued. The urine became dark yellow. Acute constant occipital headache developed. There were chills and fever but no diarrhea. Three days prior to admittance the patient vomited about a cup of bright red blood. Vomiting continued but the vomitus was not bloody. The next day nonproductive cough began and the patient also became irrational and unresponsive.

Up to the time of illness the patient was a healthy, vigorous construction worker. He had been in the South Pacific during World War II. Except for intermittent "flu" he had not had severe disease of the respiratory tract and there was no history of hemoptysis or pain in the chest.

Upon physical examination the patient was noted to be well nourished, well developed, confused, irrational and pallid. There was questionable jaundice. The body temperature was 102.4 F. Blood pressure was 140/60 mm. of mercury and the pulse rate 100 and regular. The pupils were equal, reacted to light and accommodation, and the sclera was questionably icteric. There was much clotted blood in the mouth. The tongue was papillated. The gums bled easily. No stiffness in the neck was noted. The chest was clear to auscultation. There was no enlargement of the heart. A soft systolic murmur was heard at the apex. No masses were palpable in the abdomen, which was soft. The liver, kidneys, and spleen were not palpable. The external genitalia were normal. Save for tarry feces on the glove no abnormality was noted in a rectal examination. There were many small petechiae over both ankles. Some paresis of the left arm was noted. There was no edema or cyanosis. Reflexes were normal except for Babinski's sign in the left foot.

Erythrocytes numbered 1,500,000 per cu. mm. of blood and the hemoglobin content was less than 7.5 gm. per 100 cc. Leukocytosis numbered 16,800 per cu. mm. Upon examination of a smear of peripheral blood, pronounced anemia, anisocytosis, poikilocytosis and polychromasia were noted, and macrocytes and normoblasts were frequently seen. Platelets were only rarely observed and no clumps were noted along the feathered edge of the side of the smear. There was moderate leukocytosis and a left shift in the granulocytic series with fairly numerous myelocytes and progranulocytes. No blast forms were noted. Results of examination of the urine were as follows: Specific gravity 1.020; color, red; pH 6; albumin, 3 plus; sugar, none; leukocytes, 1 to 2 per high power field; reaction for occult blood, 4 plus.

COURSE

On August 5 the patient was irrational, almost maniacal, and responded only briefly to phenobarbital. Blood could not be administered because of patient's thrashing about.

Next day the patient was comatose. The skin was moist and sweaty. Respirations were 50 per minute and forced, with some stridor. Many coarse inspiratory and expiratory rales were heard in the lungs. The heart sounds were distant and the pulse was regular at a rate of 140 to 160 per minute. The body temperature was 103.4° F. The patient died approximately 15 hours after admission.

POSTMORTEM EXAMINATION

Petechial hemorrhages throughout the body were seen macroscopically and there was evidence of gross bleeding into many of the body cavities.

The microscopic examination was extremely informative, for the nature and extent of the basic lesion was observed. It consisted of a platelet thrombus adjacent to an area of injured vascular endothelium. Platelet thrombi were seen throughout the various viscera and other tissues such as the striated muscle of the diaphragm, the pituitary and the central nervous system. The process apparently began as a fibrinoid degeneration involving the media and the subintimal tissue. This apparently accumulated and caused an intraluminal projecting mass with an intact endothelium. There was endothelial hyperplasia in this region. Apparently rupture of the endothelium overlying this mass occurred and was followed by agglutination and formation of a thrombus made up of platelets, which in turn propagated further platelet thrombi. These platelet thrombi were not noted in the liver or the lungs. Fairly large numbers of megakaryocytes were noted in the lungs.

SUMMARY

In a case of thrombocytopenic purpura complicated by bizarre mental and neurological changes and by hemolytic anemia, the possibility of thrombotic thrombocytopenic purpura should be considered. This is particularly true if the course is febrile and stormy and the skin is *cafe-au-lait*. The diagnosis may be established by appropriate examination of bone marrow or by biopsy of the skin or muscle tissue.

260 Vine Street.

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Nasal Myiasis

DONALD G. CASTERLINE, M.D., Berkeley

IN THE SUMMER of 1953 an entomologist doing research work at Port Barrow, Alaska, used the aspirator method of collecting small insects. Two months later he began to have severe intermittent fever, shaking chills, frontal headaches, profuse sweats, and pronounced general malaise. These symptoms continued for about four days. A physician who was consulted at the time felt that the patient had an infection of influenzal type. Shortly thereafter, the patient spat a large number of insects that came down from the nasopharynx. These were four major groups of insects (Coleoptera, Collembola, Diptera, and Hymenoptera). The insects included three adult rove beetles (Staphylinidae), 13 fungus gnat larvae (Mycetophilidae), three egg parasitic wasps (Mymaridae), and about 50 spring-tails (Collembola).

Upon physical examination at that time a rather profuse mucoid discharge from the left nares was noted and there was reddening throughout the nasopharynx. X-ray films of the sinuses demonstrated punctate densities in the left antrum, both peripherally and centrally.

Irrigations of the left antrum were carried out and the material washed out was preserved in 95 per cent alcohol and studied microscopically. In it were many insect fragments that were identified as follows:

Order	*Family*	*Species*
1. Collembola	Isotomidae	Isotoma Olivacea Tullberg*
2. Coleoptera	Staphylinidae	Micralymna brevilingue Schiodte*
3. Diptera	Mycetophilidae	Boletina birulai (Lundstrom)†
4. Hymenoptera	Mymaridae	Mymar species*

*Adult, †Larvae.

There are two aspects of unusual interest in this case. First, none of the insects reported have been previously shown to cause myiasis in man. Second, it may be assumed that infestation occurred because of the aspirator method for collecting small sized insects, which is commonly used by entomologists.

2316 Dwight Way.

California MEDICINE

For information on preparation of manuscript, see advertising page 2

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EDITORIALS

Medical Schools Aided

MANY OF THE COUNTRY'S medical schools will be assisted this year by a gift of $100,000 approved by the California Medical Association at its 1954 Annual Session.

This appropriation was approved by the Council and confirmed by official action of the House of Delegates. The contribution carries one string—only medical schools that are not state-supported institutions are to participate in allotments from this particular fund.

Back of this vote lies a rather sorry story of apparent lack of interest on the part of California physicians in contributing to the American Medical Education Foundation. Where voluntary contributions have failed to produce a decent sum, the policy-making bodies of the Association took it upon themselves to make up for this lack.

In the first year of operation of the American Medical Education Foundation, the California Medical Association voted, through its Council, to appropriate $100,000 to this worthy cause. This vote was taken both as a means of supporting the fund drive and of encouraging other states to take similar steps.

The following year there was criticism of the Council's action, not because of a lack of sympathy with the objective but because of the question of policy as to whether or not the Council should be so generous with the Association's funds without express authority from the House of Delegates.

In view of this criticism the Council voted not to repeat the initial contribution but to try to organize a statewide drive to secure individual contributions. This was done for two years, with rather dismal results. Individual physicians found it convenient to forget about the need for financing medical schools. Some reported their own gifts, each to his own *alma mater*. Some questioned the propriety of supplying funds to state-supported medical schools that had merely to go to a state legislature for needed money.

Conversely, some physicians gave generously, either to the American Medical Education Foundation or direct to their own schools. The sad part of this otherwise bright note was that the generosity of the few was more than outweighed by the paucity of gifts from the many. The average was extremely low.

In 1953, a proposal was made to the CMA House of Delegates to add $25 per year to the Association's membership dues and to earmark this sum for the AMEF. This proposal was defeated by the House, which suggested that pamphlets be prepared for enclosure with the 1954 dues statements. This was done and the response was somewhat improved over the preceding year. Still, the average for the physicians of California remained low.

Suggestions have been made that the raising of funds for our medical schools should be placed in the hands of professional fund-raisers. Others have urged that a separate department of the Association be established for this single purpose. Still others have argued that the only way a decent fund may be raised each year is through an addition to the annual dues.

All these suggestions have met with objections, for a variety of reasons. The ultimate system for assuring a reasonable contribution from the physicians of California, year in and year out, has not yet been adopted. The need remains but the method has not yet arrived.

In view of this stalemate, the CMA Council took the action this year of again appropriating $100,000 to aid medical education. This time the Council's action was taken directly to the House of Delegates. There, where several years ago the cry was raised that the House might not have approved the action

by the Council, this year there was no objection voiced to supplying the $100,000 to the AMEF. The only condition was the one already mentioned, namely, that medical schools that are primarily state-supported are not to share in these funds. Such schools are expected, rather, to seek their operating budgets from their own state legislatures.

This appropriation will establish California in the higher echelons of the states, both in total funds contributed and in the average contribution per member. Such a position, however, will hold only for 1954 under the terms of the present commitment. What will happen in 1955 or later years still is not known. It is evident that the needs of the medical schools will continue from year to year. It is evident that physicians must take an aggressive attitude in raising the funds that are needed for properly conducting our schools. It is evident that a sound, continuing program for raising funds must be set up. It is likewise evident that the hit-or-miss reliance on individual contributions is not the answer to this problem and this need.

Suggestions will be gratefully received. Contributions likewise.

Ladies Present

In this issue we sweep our plumes in greeting to the ladies of the Woman's Auxiliary to the California Medical Association. On page 49 appears the first of a proposed series of monthly reports of the various activities of the Auxiliary. It was prepared by Mrs. Frederick J. Miller, of Bakersfield, who in May of this year was installed as president of the organization.

We have long been aware, of course, of the Auxiliary's toil in behalf of the California Medical Association, but perhaps not keenly enough aware of it or of the specific results our womenfolk have achieved. The purpose of the new page is to serve as a bulletin board where the Auxiliary can post, for perusal by members of the California Medical Association, a record of its projects and achievements, citing chapter and verse, naming names and stating amounts.

The design for the heading that is used on the new page—the seal of the Woman's Auxiliary superimposed upon the classical medical symbol for woman—was inspired by the kindled words of an anonymous writer of advertising copy. While casting about for a suitable idea for a heading for the page, we chanced upon an advertisement that read: "pretty, gentle, demure, soft, affectionate, receptive, maternal—in a word, *feminine*." This rather pleasantly emotional message was tied in with a picture of the symbol for woman. That solved our problem. If a mere symbol could mean so much, why, by all means we must use it.

We turn now, as ever we must, *to the ladies*. Page 49.

California MEDICAL ASSOCIATION

NOTICES & REPORTS

Council Meeting Minutes

Tentative Draft: Minutes of the 406th and 407th Meeting of the Council of the California Medical Association, Los Angeles, Biltmore Hotel, May 8-12, 1954.

406th Meeting

The meeting was called to order by Chairman Shipman in Conference Room No. 8 of the Biltmore Hotel, Los Angeles, at 9:30 a.m., Saturday, May 8, 1954.

Roll Call:

Present were President Green, President-Elect Morrison, Secretary Daniels, Editor Wilbur, Speaker Charnock, Vice-Speaker Bailey and Councilors West, Wheeler, Loos, Sampson, Pearman, Ray, Shipman, Lum, Bostick, Teall, Varden, Heron, Frees, Carey, Kirchner and Reynolds. Absent for cause, Councilor Dau.

A quorum present and acting.

Present during all or a part of the meeting were Messrs. Hunton, Thomas, Clancy, Gillette and Pettis of C.M.A. staff; legal counsel Hassard; Ben H. Read of the Public Health League of California; county society executive secretaries Scheuber of Alameda, Jensen of Fresno, Young of Los Angeles, Foster of Sacramento, Nute of San Diego, Thompson of San Joaquin, Wood of San Mateo, Donovan of Santa Clara; Mr. K. L. Hamman, Mr. E. R. Paolini and Mr. Marshall Virello of C.P.S.; Mr. Rollen Waterson; Messrs. Leland Harris and Lee Simmons, University of California medical students; and Doctors J. R. Upton, Burt Davis, Fred Borden, Malcolm Merrill, Thomas N. Foster, Fred Ewens, Thomas LeValley, John W. Cline, Max Pickworth, Leon O. Fox, Edward C. Rosenow, Jr., J. Norman O'Neill, Joseph Josephson, Dwight H. Murray, Samuel R. Sherman, Francis T. Hodges, A. E. Larsen and Henry A. Randel.

1. *Introduction of Guests:*

The chairman introduced to the Council Messrs. Leland Harris and Lee Simmons, medical students at University of California Medical School, attending the session as guests of the Association representing the Student A.M.A. chapter at that school.

2. *Membership:*

(a) A report of membership as of May 1, 1954, was received and ordered filed.

(b) On motion duly made and seconded, reinstatement was voted for 3,229 delinquent members whose dues had been received since April 1, 1954.

(c) On motion duly made and seconded in each instance, Retired Membership was voted for the following 19 applicants: George W. Brown, Holland G. Hambleton, William J. Lakey, A. Edwin Larson, Arthur Mayer, Charles C. Prince, Cecil J. Smith, Guy W. Townsend, Julius N. Van Meter, Los Angeles County; John T. Leland, Marin County; Clyde E. Harner, Riverside County; J. Roy Jones, Sacramento County; Hans Barkan, Roscoe N. Gray, Mario Isnardi, Alexander S. Keenan, C. H. Woolsey, San Francisco County; Henry M. Benning, Neville T. Ussher, Santa Barbara County.

ARLO A. MORRISON . . . . . President
SIDNEY J. SHIPMAN, M.D. . . . . President-Elect
DONALD A. CHARNOCK, M.D. . . . . Speaker
WILBUR BAILEY, M.D. . . . . Vice-Speaker
DONALD D. LUM, M.D. . . . . Council Chairman
ALBERT C. DANIELS, M.D. . . . . Secretary-Treasurer
IVAN C. HERON, M.D. . Chairman, Executive Committee
DWIGHT L. WILBUR, M.D. . . . . Editor
JOHN HUNTON . . . . . Executive Secretary
General Office, 450 Sutter Street, San Francisco 8
ED CLANCY . . . . . Director of Public Relations
Southern California Office:
417 South Hill Street, Los Angeles 13 • Phone MAdison 6-0683

(d) On motion duly made and seconded in each instance, Associate Membership was granted to the following 79 applicants: H. S. Collissi, Robert M. Drake, W. A. Ketterer, Alameda-Contra Costa County; Alfred Bicunas, James Gonner, Fresno County; Mario J. Acquarelli, Forrest H. Adams, Molly B. Baker, Robert N. Baker, R. E. Bartlett, William S. Beck, Harold Birnbaum, Arthur J. Bischoff, William H. Blahd, Elena Boder, William J. Brown, John M. Buchanan, Weldon K. Bullock, Aaron A. Cohen, Sidney Cohen, D. Alfred Dantes, William J. Dignam, Ralph B. Elias, Margaret W. Fate, Solomon Fegen, Walter A. Flieg, Michael R. Frisch, Hal C. Gregg, Richard A. Griffith, William L. Gruber, Karl H. Haase, Frederic W. Haigh, Milton R. Hales, James A. Halsted, Percy G. Hamlin, G. A. Heidbreder, Kenneth A. Heitmann, Joan E. Hodgman, Donald D. Hoytt, Maurice M. Hyman, Frank Isaac, Georgia L. Johnson, Melvin R. Kaplan, Raymond Kelso, Jr., Edward Leon King, Benjamin F. Klaumann, Richard A. Koones, Baldwin G. Lamson, Richard E. Lewis, Martin Loebmann, Harry Mandel, Joseph I. Marx, Stephen H. Matthews, Eduardo Mora, Mary Mulloy, Elmer Olesky, Jay J. Palmer, Morton L. Pearce, Melvin R. Plancey, Josef Preizler, Catherine F. Roberts, Willoughby J. Rothrock, Bernard R. Rowen, Dayrel D. Smith, Dorothy Tatter, J. K. Van Deventer, Winston F. Whipple, David Whyte, Robert H. Wier, Roscoe C. Williams, Claire M. Wyndham, Los Angeles County; George Nasser, Frank W. Pinger, Napa County; Sam Christian, Sacramento County; William S. Mowrey, San Diego County; Thomas Feichtmeier, Russel V. Karleen, Henry I. Kohn, Max Pegram, San Francisco County.

(e) On motion duly made and seconded, reductions of dues were voted for 21 applicants, for reasons of postgraduate study or protracted illness.

(f) Report was made on a disciplinary case in the Butte-Glenn County Medical Society, in which the accused had been voted expelled from membership. An appeal may be made to the Council within 60 days.

3. *Financial:*

(a) A report of bank balances as of May 1, 1954, was received and ordered filed.

(b) On motion duly made and seconded, it was voted that pregnancy did not constitute grounds for a reduction of dues.

(c) Chairman Lum of the Auditing Committee presented the proposed budget for the 1954-1955 fiscal year. On motion duly made and seconded, it was voted to submit this budget to the House of Delegates, subject to possible inclusion of additional items to be considered prior to the first session of the House.

4. *Blood Bank Commission:*

(a) Dr. John R. Upton, chairman of the Blood Bank Commission, reported that negotiations were under way for the acquisition by the San Joaquin County Medical Society of the blood bank currently operated in Stockton under other auspices. He recommended a loan of $36,500 to the San Joaquin County Medical Society from the revolving loan fund previously authorized by the Council, so that this transfer might be effected.

On motion duly made and seconded, it was voted to loan the San Joaquin County Medical Society or its blood bank (if separately incorporated) $36,500 to assist in the establishment of a blood bank in Stockton.

(b) Dr. Francis West presented a check for $6,959 from the San Diego Blood Bank, this payment representing the repayment of the entire loan advanced to that blood bank by the Association.

5. *Minutes for Approval:*

On motion duly made and seconded, minutes of the 405th meeting of the Council, held March 21, 1954, were approved. The chairman pointed out that this approval included approval of an appropriation voted at that time to aid in the program of the Santa Clara County Medical Society.

6. *State Department of Public Health:*

Dr. Malcolm Merrill, State Director of Public Health, reported that 13,000 to 14,000 children would be inoculated with the Salk polio vaccine and that the state virus laboratory would cooperate in checking results. He also gave the tables for use of gamma globulin during 1954.

Dr. Merrill also reported on a legislative interim committee which is considering the proposals for allocation of state funds in aid of construction of private non-profit hospitals.

Dr. Merrill stated that his department was attempting to decentralize the administration of its crippled children's services by placing administration in the counties. County administration is now operative in 17 counties, covering about 75 per cent of the state's population and he asked assistance in reaching about ten more counties to bring the total coverage up to about 90 per cent or more. On motion duly made and seconded, it was voted to encourage the county medical societies to aid in establishing county administration of crippled children's services, where economically feasible.

7. *Santa Clara County Medical Society:*

Drs. Fred Borden and Max Pickworth, representing the active staff of O'Connor Hospital, San Jose, criticized the Council for having voted funds to the Santa Clara County Medical Society to aid in a campaign to augment the staff organization of the hos-

pital. They reported that the hospital bed occupancy was about as great, numerically, as in the old hospital.

It was pointed out that members of the Santa Clara County Medical Society had voted 255 to 66 in disapproval of the hospital's medical staff policies and 231 to 100 in favor of an assessment of $10 a member to raise funds to work for changes in this policy.

Dr. John W. Cline reported on his efforts to effect conciliation in this controversy and expressed his opinion as to the need for such conciliation, which had earlier been refused by the hospital administration.

On motion duly made and seconded, it was voted that the chairman appoint a special committee to study the overall situation and report back to the Council. The chairman appointed Dr. John W. Cline chairman of this committee and Drs. Howard Naffziger, T. Eric Reynolds, Ivan C. Heron and Sidney J. Shipman as members.

8. *American Medical Education Foundation:*

Dr. John W. Cline urged the Council to provide funds to assist the American Medical Education Foundation in assisting the medical schools of the country. After voting to defer action on this proposal, the Council on May 9, after motion duly made and seconded, voted to add $100,000 to the budget for the American Medical Education Foundation for distribution among the non-state-operated medical schools.

9. *Standing Committees:*

The chairman appointed Dr. Dwight L. Wilbur chairman of a committee to recommend members for the standing committees, with Drs. H. C. Loos and Francis E. West as the other members. At the recessed meeting of May 12, the committee proposed and the Council, on motion duly made and seconded, voted approval of these nominations:

Committee on Associated Societies and Technical Groups—Dr. Charles E. Grayson, Sacramento, 1957.

Committee on History and Obituaries—Dr. J. Marion Read, San Francisco, chairman, reappointed, 1957.

Committee on Hospitals, Dispensaries and Clinics —Jay J. Crane, Los Angeles, chairman, reappointed, 1957.

Committee on Industrial Practice—John E. Kirkpatrick, San Francisco, 1957.

Committee on Medical Economics—L. H. Fraser, Richmond, Chairman, reappointed 1957.

Committee on Medical Education and Medical Institutions — Loren R. Chandler, San Francisco, 1957.

Committee on Military Affairs and Civil Defense —Justin J. Stein, Los Angeles, chairman, reappointed, 1957.

Committee on Postgraduate Activities — J. E. Young, Fresno, reappointed, 1957.

Committee on Public Policy and Legislation— Dan O. Kilroy, Sacramento, reappointed, 1957.

Committee on Scientific Work—George C. Griffith, Los Angeles, 1957.

Physicians' Benevolence Committee—Axcel E. Anderson, Fresno, chairman, reappointed, 1957.

Committee on Public Relations—J. Lafe Ludwig, Los Angeles, reappointed. Frank A. MacDonald, Sacramento, reappointed.

10. *Medical Services Commission:*

Dr. Ralph Teall presented the supplemental report of the Medical Services Commission, in which the Council was requested to enter several resolutions into the House of Delegates.

On motion duly made and seconded, it was voted to introduce the following resolution in the House of Delegates:

Resolved, That the California Medical Association proceed with vigor in the study, development and implementation of the Usual Fee Indemnity Plan.

On motion duly made and seconded, it was voted to introduce the following resolution in the House of Delegates:

WHEREAS, Many people are anxious to know in advance what their attending doctors' fees will be in order that they may secure adequate insurance or other means to pay those fees without worry about the financial problem at the time they need medical care; and

WHEREAS, Nearly all doctors already have fees which are their customary charges for the particular service involved; now, therefore, be it

Resolved, That the California Medical Association urge each of its members (a) to set up a list of his own fees, (b) to make this list known to his own patients, and (c) to assure his patients that he will make no higher charges except by agreement with the patient concerned before service is given.

On motion duly made and seconded, it was voted to introduce the following resolution in the House of Delegates:

WHEREAS, Many physicians in the state of California, and many component medical societies have felt a desire to provide service benefits with greater certainty of coverage for subscriber groups within their own areas; and

WHEREAS, They have suggested that this should be done by the raising of the "income ceiling" in C.P.S. operations; and

WHEREAS, This House of Delegates has already gone on record as recommending experimentation in this field on the county society level with a view to ultimate development of improved forms of medical care insurance based on demonstrated experience and results; therefore, be it

Resolved: That this House of Delegates recommend:

1. That the California Physicians' Service develop a form of service coverage based on a $6,000 income ceiling, with appropriate increases in the dues structure and in the schedule of fees to be paid, and in the formulation of a uniform schedule of fees;

2. That each county society be authorized to request that this form of C.P.S. coverage be offered within its own area, in addition to the present contracts;

3. That physician members of C.P.S. in a county which has not requested the higher ceiling, abide by the income ceiling (in providing full services without additional charge) for beneficiaries who have secured this coverage in some other county medical society area.

On motion duly made and seconded, it was voted to introduce the following resolution in the House of Delegates:

WHEREAS, The Medical Services Commission is making a continuing study of the economics of medical practice, and acts as an advisory committee to the Council of the California Medical Association; and

WHEREAS, The recommendations made to the Council of the California Medical Association by the Medical Services Commission are of vital importance to both rural and urban members of the California Medical Association, whether general practitioner or specialist; now, therefore, be it

Resolved, That the number of members of the Medical Services Commission be increased from nine to twelve.

Recess:

At this point, 6:40 p.m., the Council, on motion duly made and seconded, voted to recess until 7:30 a.m., Sunday, May 9, 1954.

11. *Public Policy and Legislation:*

Dr. Dwight H. Murray, chairman of the Committee on Public Policy and Legislation, discussed the federal legislative situation. Mr. Ben H. Read, executive secretary of the Public Health League of California, stressed the importance of participating in the primary elections to be held June 8.

12. *Committee on Postgraduate Activities:*

Dr. Edward C. Rosenow, Jr., reported that the committee would not require additional funds in the next year. He stated that the University of Southern California would have thirteen half-hour television lectures available and the committee would like to make kinescopes for postgraduate education.

13. *Audio-Digest Foundation:*

Dr. Rosenow, as editor of Audio-Digest, reported the foundation should be operating at a profit in the near future. He stated the need for a physician who might be physically handicapped, to handle medical library work.

Mr. Hassard discussed the necessity for a permanent board of directors for Audio-Digest Foundation.

On motion duly made and seconded, it was voted that the loan of $10,000 to Audio-Digest Foundation previously authorized, be for a period of five years with amortization at the discretion of the foundation's directorate. The Board of Directors was authorized to set a satisfactory compensation for the Editor when it sees fit to do so.

14. *Committee on Adoptions:*

On motion duly made and seconded, it was voted to thank the members of the special Committee on Adoptions for their services and to continue this important work with another committee to be named by the chairman with the consent of the Council.

15. *Woman's Auxiliary:*

On motion duly made and seconded, it was voted to appoint Drs. Matthew N. Hosmer and John E. Vaughan to the Advisory Committee to the Woman's Auxiliary to the C.M.A.

16. *Vocational Nursing:*

Dr. Morrison discussed the few replies he had received to his distribution of the proposed curriculum for vocational nurse training and asked for additional suggestions.

Recess:

At this point the Council was declared in recess until 7:30 a.m., Monday, May 10, 1954.

17. *Crippled Children's Services:*

Dr. West discussed the request of the State Department of Public Health for appointment of a committee to consider the advisability of recognizing for services in this field the specialists certificated by other healing groups. On motion duly made and seconded, it was voted to appoint Dr. Francis M.

McKeever of Los Angeles as chairman of this committee, with Drs. John W. Green of Vallejo and Hartzell Ray of San Mateo as the other members.

Recess:

At this point the Council was declared in recess until 7:30 a.m., Tuesday, May 11, 1954.

18. *California Medicine:*

Editor Dwight L. Wilbur of CALIFORNIA MEDICINE urged that the institutional advertising of the Wine Advisory Board of California be accepted in the journal, provided such advertising did not mention any brand or trade names. On motion duly made and seconded, it was voted to accept this advertising, Drs. Sampson, Teall, Carey and Charnock being recorded as voting in the negative.

19. *Committee on Industrial Accident Commission:*

Dr. Frank J. Cox, committee chairman, reported that the proposed industrial accident fee schedule had been taken under advisement by the Industrial Accident Commission of the State of California and that a decision by the commission was expected in the near future, possibly following an additional public hearing.

20. *Audio-Digest Foundation* (see also No. 13):

Mr. K. L. Hamman reported on his study of the business setup of Audio-Digest Foundation. As of March 31 there were 373 general subscribers for the weekly service, 73 for the biweekly surgical service, 57 for internal medicine and 33 for obstetrics, for a total of 536. Mr. Pettis reported the total now at 650.

Mr. Hamman stated that a special reserve fund was being established to handle subscriptions paid in advance, with provision for the foundation to draw one-twelfth of this fund each month. He recommended that the Board of Directors of Audio-Digest Foundation be increased and Southern California physicians added, so that frequent board meetings might be held without necessitating undue traveling by more distant members.

Recess:

At this point the Council was declared in recess until 7:30 a.m., Wednesday, May 12. The recess was taken out of respect to Councilor O. W. Wheeler because of the death of his father.

21. *Rural Health Conference:*

On motion duly made and seconded it was voted to invite the Council on Rural Health of the American Medical Association to hold its 1956 Rural Health Conference in California.

22. *Committee on Blue Cross-Blue Shield:*

The chairman read a report from Dr. Lewis A. Alesen, chairman of the Committee on Blue Shield-Blue Cross, in which he urged the appointment and continuance of a liaison committee between the three organizations represented. On motion duly made and seconded, it was voted to accept this report with thanks and to implement the suggestion of a continuing liaison committee.

23. *Student American Medical Association:*

Speaker Charnock reported on a meeting of Student A.M.A. members held in Los Angeles on April 25, with about 400 attending. On motion duly made and seconded, it was voted to provide funds for a similar meeting of medical students in the San Francisco area later in the year.

On motion duly made and seconded, it was voted to commend Dr. Charnock for his valuable services in arranging and conducting this meeting in cooperation with the Public Relations Department.

24. *Fifty-Year Pin for Late Doctor George H. Kress:*

On motion duly made and seconded, it was voted to award a Fifty-Year Membership Pin to Mrs. George H. Kress in memory of her late husband and to ask Dr. William R. Moloney, Sr., to accept the pin in her behalf.

25. *C.P.S. Fee Schedule:*

Dr. Francis J. Cox reported that his committee had considered changes in the C.P.S. fee schedule to accompany an increase in the income ceiling and had voted (1) to make immediate changes in only four items, covering home and office visits and (2) to eliminate the total fee concept in the existing schedule. On motion duly made and seconded, it was voted to accept this recommendation, the chairman to report this action to the C.P.S. Reference Committee in the House of Delegates.

Dr. Cox also reported that his committee did not feel able at this time to recommend that lump sum payments be provided for by C.P.S. in case of major illness but that the C.P.S. Board of Trustees had agreed to run a test for several months on nine major illnesses, to gather evidence on the feasibility of employing this fee schedule method. The committee recommended that C.P.S. be authorized to run such a test for three months, to determine if this method is workable, financially sound and an answer to the problem of handling these cases, a recommendation already accepted by the C.P.S. Trustees.

Dr. Cox further recommended that the Medical Services Commission be instructed to ask the county medical societies to follow the uniform pattern of the Blue Shield Commission in developing schedules of usual fees. On motion duly made and seconded, it was voted to ask the Medical Services Commission to proceed along these lines.

On motion duly made and seconded, it was voted to thank Dr. Cox and his fee schedule committee for their fine work.

26. *Committee on Public Relations:*

Dr. Lum requested that the Committee on Public Relations be asked to undertake a study of the public relations activities of the Association and the related activities of California Physicians' Service. It was agreed to make such a request.

27. *Farewell from Retiring President:*

President John W. Green expressed his thanks to the Council for its cooperation and asked that all members remain honest and charitable, with no hard feelings in cases of decisions adverse to individual sentiments. He expressed a fond farewell at the conclusion of his fourteen years as a member of the Council.

28. *Committee on Malpractice Insurance:*

Drs. Kirchner and Bostick and Mr. Hassard reported on malpractice insurance problems occurring in various parts of the state, including availability of coverage, premium rates, group programs, and other factors. On motion duly made and seconded, it was voted to create a special committee to investigate the entire subject of malpractice insurance and to report back to the Council with such recommendations as it may consider desirable.

Adjournment:

There being no further business to come before it, the Council was adjourned at 9:20 a.m., Wednesday, May 12, 1954.

* * *

407th Meeting

The meeting was called to order by Chairman Shipman in Conference Room No. 2 of the Biltmore Hotel, Los Angeles, at 7:00 p.m., Wednesday, May 12, 1954.

Roll Call:

Present were President Morrison, President-Elect Shipman, Speaker Charnock, Vice-Speaker Bailey, Secretary Daniels, Editor Wilbur and Councilors West, Loos, Sampson, Pearman, Ray, Lum, Bostick, Teall, Varden, Heron, Frees, Carey, Reynolds, Randel and Sherman. Absent for cause, Councilors Wheeler and Kirchner.

A quorum present and acting.

Present by invitation were Messrs. Hunton, Thomas, Clancy, Pettis and Gillette of C.M.A. staff; legal counsel Hassard; K. L. Hamman; Rollen Waterson; and Drs. Edward C. Rosenow, Jr., and E. V. Askey.

1. *Election of Chairman:*

On nomination duly made and seconded, Dr. Donald D. Lum was unanimously elected chairman and assumed the chair.

2. *Welcome to New Members:*

The chairman expressed a welcome to Dr. Henry A. Randel of Fresno and Dr. Samuel R. Sherman of San Francisco, newly-elected members of the Council.

3. *Election of Vice-Chairman:*

On nomination duly made and seconded, Dr. Ivan C. Heron was unanimously elected vice-chairman of the Council.

4. *Appointments:*

(a) On motion duly made and seconded, Dr. Albert C. Daniels was unanimously appointed Secretary-Treasurer.

(b) On motion duly made and seconded, Dr. Dwight L. Wilbur was unanimously appointed Editor.

(c) On motion duly made and seconded, John Hunton was unanimously appointed Executive Secretary, the Executive Committee to decide on an employment contract.

(d) On motion duly made and seconded, Peart, Baraty & Hassard were unanimously appointed legal counsel.

5. *Committee on Adoptions:*

Several names were suggested for the Committee on Adoptions. On motion duly made and seconded, it was voted to leave the selection of this committee to the Executive Committee.

6. *Committee on Public Health and Public Agencies:*

Dr. Frank J. West, chairman, reported that a Commission on Chronic Alcoholism was to be formed, with three physician and six lay members. A budget of $100,000 is to be provided for its studies.

Dr. West also reported that the chronic disease section of the State Department of Public Health has asked the Rockefeller Foundation for $100,000 to study the preventive aspects of chronic disease and to determine a future program.

On motion duly made and seconded, it was voted to relieve Dr. Hollis Carey from further duties with the committee and to name Dr. Henry A. Randel as his successor; Dr. West remains chairman and Dr. Loos a member.

7. *Loyalty Oaths:*

Dr. Charnock asked that study be given to the possible screening of security risks in the medical schools, especially in view of recent cases where physicians have been drafted as Army privates because they failed to qualify for medical commissions by virtue of declining to sign the required loyalty oath.

8. *Appointment of Auditing Committee:*

The chairman, with the consent of the Council, named Dr. Ivan Heron chairman and Drs. T. Eric Reynolds and Samuel R. Sherman members of the Auditing Committee.

9. *Trustees of California Physicians' Service:*

On nominations duly made and seconded, it was unanimously voted to appoint Drs. A. A. Morrison and Ivan C. Heron as trustees of California Physicians' Service, leaving one vacancy at this time.

Adjournment:

There being no further business to come before it, the meeting was adjourned at 8:55 p.m.

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Executive Committee Minutes

Tentative Draft: Minutes of the 243rd Meeting of the Executive Committee of the California Medical Association, Los Angeles, Biltmore Hotel, May 12, 1954.

The meeting was called to order by Chairman Lum in Conference Room No. 2 of the Biltmore Hotel, Los Angeles, at 9:00 p.m., Wednesday, May 12, 1954.

Roll Call:

Present were President Morrison, Speaker Charnock, Auditing Committee Chairman Heron, Council Chairman Lum and, ex-officio, Secretary Daniels and Editor Wilbur.

A quorum present and acting.

Present by invitation were executive secretary Hunton and legal counsel Hassard.

1. *Election of Chairman:*

On motion duly made and seconded, Dr. Ivan C. Heron, chairman of the Auditing Committee, was unanimously elected chairman of the Executive Committee.

Adjournment:

There being no further business to come before it, the meeting was adjourned at 9:05 p.m.

Medical Dates Bulletin

THIS BULLETIN of the dates of postgraduate education assemblies and the meetings of various medical organizations in California is supplied by the Committee on Postgraduate Activities of the California Medical Association. In order that they may be listed here, please send communications relating to your future medical or surgical programs to: C. A. Broaddus, M.D., 1036 North Center Street, Stockton 3, California.

OCTOBER

California Society of Internal Medicine, Yosemite National Park, October 2, Dr. Walter Beckh, 384 Post Street, Suite 603, San Francisco 8.

San Francisco Heart Association, 25th Annual Postgraduate Symposium on Heart Disease, October 6-7-8, Gladys Taylor Daniloff, 604 Mission Street, San Francisco 5.

Los Angeles County Heart Association, Annual Professional Symposium on Heart Disease, October 13-14, Mr. Robert Pike, 316 S. Bonnie Brae, Los Angeles, executive director.

San Diego County Heart Association, Annual Professional Symposium on Heart Disease, Friday, October 15, H. Jack Hardy, 1651 Fourth Avenue, San Diego 1, executive director.

California Academy of General Practice, Sixth Annual Scientific Assembly, Los Angeles, October 24, 25, 26, 27, Wm. W. Rogers, 461 Market Street, San Francisco, executive secretary.

NOVEMBER

Los Angeles Urologic Research Convention, Los Angeles, November 8-12.

AMERICAN MEDICAL ASSOCIATION

Clinical Session, 1954, Miami, November 30-December 3.
Clinical Session, 1955, Boston, November 29-December 2.

In Memoriam

CADY, DONALD W. Died in Pasadena, April 14, 1954, aged 60, of a gastric ulcer. Graduate of New York University College of Medicine, New York, 1921. Licensed in California in 1925. Doctor Cady was a member of the Los Angeles County Medical Association.

✤

CRAWFORD, WILLIAM W. Died in San Diego, May 13, 1954, aged 80. Graduate of the University of Colorado School of Medicine, Denver, 1911. Licensed in California in 1912. Doctor Crawford was a member of the San Diego County Medical Society.

✤

CRUMRINE, HENRY C. Died April 4, 1954, aged 77. Graduate of the University of Wooster, Medical Department, Cleveland, Ohio, 1900. Licensed in California in 1934. Doctor Crumrine was a member of the Los Angeles County Medical Association.

✤

CUSHMAN, RUGGLES A. Died recently in Santa Ana, aged 97. Graduate of Dartmouth Medical School, Hanover, New Hampshire, 1882. Licensed in California in 1891. Doctor Cushman was a retired member of the Mendocino-Lake County Medical Society, and the California Medical Association.

✤

FERNANDEZ, MANUEL L. Died in Richmond, April 27, 1954, aged 77. Graduate of the University of California Medical School, Berkeley-San Francisco, 1900. Licensed in California in 1901. Doctor Fernandez was a retired member of the Alameda-Contra Costa Medical Association, the California Medical Association, and an associate member of the American Medical Association.

✤

FORT, WALTER A. Died May 23, 1954, of coronary thrombosis, aged 63. Graduate of the University of Michigan Medical School, Ann Arbor, 1917. Licensed in California in 1939. Doctor Fort was a member of the Solano County Medical Society.

✤

HANSEN, VICTOR M., JR. Died in Loma Linda, May 2, 1954, aged 30. Graduate of the College of Medical Evangelists, Loma Linda-Los Angeles, 1949. Doctor Hansen was a member of the Los Angeles County Medical Association.

POWELL, BARTON J. Died in Grass Valley, May 6, 1954, aged 51, of coronary artery disease. Graduate of the University of Illinois College of Medicine, Chicago, 1929. Licensed in California in 1929. Doctor Powell was a member of the Placer-Nevada-Sierra County Medical Society.

✤

PROSTERMAN, FRANCES. Died May 5, 1954, aged 66. Graduate of the Stritch School of Medicine of Loyola University, Chicago, Illinois, 1921. Licensed in California in 1944. Doctor Prosterman was a member of the Los Angeles County Medical Association.

✤

ROONEY, HENRY M. Died in Los Angeles, June 6, 1954, aged 75. Graduate of the University of Michigan Medical School, Ann Arbor, 1903. Licensed in California in 1904. Doctor Rooney was a member of the Los Angeles County Medical Association.

✤

SEAVEY, MINNIE A. Died in Sacramento, April 19, 1954, aged 84. Graduate of the Cooper Medical College, San Francisco, 1907. Licensed in California in 1908. Doctor Seavey was a retired member of the Sacramento Society for Medical Improvement, the California Medical Association, and an associate member of the American Medical Association.

✤

STELLAR, ROBERT W. Died in Redondo Beach, April 14, 1954, aged 59. Graduate of Harvard Medical School, Boston, Massachusetts, 1923. Licensed in California in 1926. Doctor Stellar was a member of the Los Angeles County Medical Association.

✤

WOOD, CHARLES M. Died in Sacramento, April 19, 1954, aged 46. Graduate of the University of Southern California School of Medicine, Los Angeles, 1936. Licensed in California in 1936. Doctor Wood was a member of the Sacramento Society for Medical Improvement.

✤

WOLFF, RUDOLF. Died in San Rafael, May 20, 1954, aged 65, of a cerebral stroke. Graduate of the Universität Heidelberg Medizinische Fakultät, Baden, Germany, 1912. Licensed in California in 1938. Doctor Wolff was a member of the Marin County Medical Society.

WOMAN'S AUXILIARY
TO THE CALIFORNIA MEDICAL ASSOCIATION

SILVER ANNIVERSARY

On May 8, the Woman's Auxiliary to the California Medical Association was 25 years old. Forty-six charter members met on that date in 1929 at Coronado to organize an auxiliary and elect state officers. Our first president was Mrs. Henry S. Rogers of Petaluma. During her term of office, ten county auxiliaries were organized, and the total membership at the end of the first year was 472.

* * *

TWENTY-FIVE YEARS OF PROGRESS

The original membership of 46 has grown to a grand total of 5,559, making California's the largest state auxiliary in the national organization. Recognizing that our steady growth and progress is owing to the wise leadership, the loyalty and devotion of our past presidents, we respectfully dedicate this first issue in CALIFORNIA MEDICINE to them:

1929-30	Mrs. Henry S. Rogers	Petaluma
1930-31	Mrs. James F. Percy	Los Angeles
1931-32	Mrs. Wm. H. Sargent	Oakland
1932-33	Mrs. Frank E. Coulter	Santa Ana
1933-34	Mrs. A. M. Henderson	Sacramento
1934-35	Mrs. Schuyler Doane	Pasadena
1935-36	Mrs. Thomas J. Clark	Philo
1936-37	Mrs. A. C. Thornton	San Diego
1937-38	Mrs. Hobart Rogers	Oakland
1938-39	Mrs. Clifford Wright	Los Angeles
1939-40	Mrs. F. N. Scatena	Sacramento
1940-41	Mrs. A. E. Anderson	Fresno
1941-42	Mrs. Harry O. Hund	San Rafael
1942-43	Mrs. F. G. Lindemulder	San Diego
1943-44	Mrs. C. C. Landis	Paradise
1944-45	Mrs. Ralph Eusden	Long Beach
1945-46	Mrs. Ralph Eusden	Long Beach
1946-47	Mrs. H. E. Henderson	Santa Barbara
1947-48	Mrs. Norman Morgan	San Francisco
1948-49	Mrs. L. K. Gundrum	Newport Beach
1949-50	Mrs. Raymond T. Wayland	San Jose
1950-51	Mrs. Wm. R. Molony, Jr.	Los Angeles
1951-52	Mrs. Stanley R. Truman	Oakland
1952-53	Mrs. Raleigh W. Burlingame	San Diego
1953-54	Mrs. Carl Burkland	Sacramento

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WE CONTINUE TO GROW

Last year we welcomed back into the state organization two county auxiliaries—Mendocino-Lake and Napa. Each unit had previously been organized twice, so we hope that "third time's a charm" holds true. Mendocino-Lake has 19 members, and Mrs. C. R. Kroeger of Ukiah is the president. Mrs. Harry Ehrlich is the president of the Napa Auxiliary, which has a paid-up membership of 26.

Santa Barbara County recently organized a northern branch in Santa Maria, with Mrs. Emmett N. McCusker as chairman. This branch now has 15 members, and nurse recruitment will be one of its first projects.

Los Angeles County has four branches — Long Beach, Pasadena, Valley and Southeast. Each of these branches carries on extensive projects of its own in addition to the work all do together as the Los Angeles County Auxiliary, which is, by the way, the largest county auxiliary in the nation. It has a membership of 1,471 and there are only 13 *state* auxiliaries with that many members!

* * *

CONTRIBUTIONS REACH ALL-TIME HIGH

Although we are not primarily a money-raising organization, we make generous contributions in money as well as time, as we assist our medical societies in their program for the advancement of medicine and public health.

Last year, under the capable leadership of Mrs. Carl Burkland, state president, our philanthropic donations reached a new high.

Mrs. Samuel Gendel of Fullerton, state chairman of the American Medical Education Foundation, reported a contribution of $7,150 to this vitally important project. In helping to finance medical education, the Auxiliary is also creating good public relations; we are proving to the members of our home communities that physicians are raising their own funds so that the high standards of medical education can continue without federal aid.

Last year, the grand total from the Auxiliary to the American Medical Association was $32,629.96. The amount will be considerably higher for the year ended June 30, 1954, since every state has been putting increased emphasis on this important project.

* * *

Physicians' Benevolence **is another of our projects which set a fine record during the past year under the chairmanship of Mrs. Charles J. Hart of Walnut Creek. Our donation was $3,370, which goes into the Fund set up in 1940 by the California Medical Association. In his annual report to the C.M.A., Chairman Axcel F. Anderson, M.D., said that the original goal of $60,000 should be at least doubled in order to provide sufficient reserves. Our Auxiliary goal is $1 per member, which will mean a check for more than $5,000. Won't you help us, by encouraging the Auxiliary in your own county to expand its efforts for this worthy cause?**

MRS. FREDERICK J. MILLER, *President*

NEWS & NOTES

NATIONAL • STATE • COUNTY

HUMBOLDT

Dr. John N. Chain, a member of the California Medical Association for 50 years, was presented with his 50-year pin during a special telecast over KIEM-TV last month. Dr. Chain, who had been unable to be present to receive the pin at the CMA Annual Session in Los Angeles, accepted the award from Dr. Clarence Crane, president of the Humboldt County Medical Society.

LOS ANGELES

At a recent meeting of the **California Society of Allergy,** the following officers were elected: President, Dr. Norman Shure, Los Angeles; president-elect, Dr. Lazarre J. Courtright, San Francisco; secretary-treasurer, Dr. Ben C. Eisenberg, Huntington Park.

PLACER

Dr. Ruth M. Moldenhauer of Springfield, Illinois, recently was appointed health director of Placer County. Dr. Moldenhauer, who was graduated with an M.D. degree at the University of Wisconsin in 1947, received a master's degree in public health at the University of California in 1951.

SAN FRANCISCO

The gold-headed cane, traditional symbol of "qualities most representative of the true physician" among medical students being graduated from the University of California School of Medicine, San Francisco, was awarded this year to Mervyn F. Burke of Berkeley. The award was made at pre-graduation ceremonies by Dr. William J. Kerr, emeritus professor of medicine. Runners-up for the award were John H. Hanson, of Arvin, and Allan B. McMie of Camino.

As a further part of the rites, Dr. Kerr gave to **Dr. Arthur L. Bloomfield,** professor of medicine, Stanford University School of Medicine, a gold-headed cane that he himself had received a year before. This cane is passed on each year to the speaker chosen, for outstanding physicianship, to address the senior class at its pre-graduation ceremonies.

* * *

Dr. Frank Gerbode, associate clinical professor of surgery at Stanford University School of Medicine, has been elected president of the **San Francisco Heart Association,** succeeding Dr. Maurice Eliaser, Jr. Other physicians elected to office were Dr. Hilliard J. Katz, secretary; Dr. Charles A. Noble, Jr., and Dr. Malcolm S. M. Watts, members of the executive committeé of the board of governors.

Dr. Howard C. Naffziger, professor emeritus of neurosurgery at the University of California School of Medicine, was made an honorary member of the German Neurological Society at a recent ceremony at Cologne University in Germany.

* * *

A separately organized **Department of Psychiatry** has been formed in the Stanford University School of Medicine in San Francisco, and Dr. George S. Johnson, professor of medicine since 1933, has been appointed executive head of the new department, it was announced recently by Dean Windsor C. Cutting.

Psychiatry previously has been a part of the school's Department of Medicine. The reorganization was necessary, it was said, to meet increasing needs of patients and to provide for expansion and research in the field.

* * *

Two guest speakers, two members of the staff and seven residents of the Fort Miley Veterans Hospital gave papers at the **Annual Residents' Program** of the hospital's Medical Service, held June 4, 1954. The program was:

The Status of Cortisone and Rheumatoid Arthritis in 1954—Ephraim P. Engleman, M.D., assistant clinical professor of medicine, University of California, attending physician, Fort Miley.

Current Day Concepts of Pulmonary Hypertension—Arthur Selzer, M.D., assistant clinical professor of medicine, Stanford University School of Medicine, attending cardiologist, Fort Miley.

The Etiology of Bronchogenic Carcinoma—H. Corwin Hinshaw, M.D., clinical professor of medicine, Stanford University School of Medicine.

The Etiology of Leukemia—Henry Kaplan, M.D., professor of radiology, Stanford University School of Medicine.

Intrapleural Use of Triethylenemelamine in Lymphomas—Jack F. Mangum, M.D., intermediate resident in medicine.

Response of Patients Receiving Long-Term Cortisone to Intravenous Corticotropins—E. W. Fredell, M.D., senior resident in medicine.

Treatment of Acute Leukemia with 6-Mercaptopurine—Marvin D. Richards, M.D., intermediate resident in medicine.

Primary Tumors of the Heart—Frederic A. Costales, M.D., junior resident in medicine.

Hypokaliemia Due to Functioning Adrenal Tumor—Laurence Foye, M.D., junior resident in medicine.

Late Electrocardiographic Findings in Posterior Myocardial Infarction—Arthur O. Stone, intermediate resident in medicine.

Debunking the Bernheim Syndrome—Herbert W. Bradley, M.D., senior resident in medicine.

SAN JOAQUIN

Operation and control of the **Stockton Regional Blood Center** was transferred from the San Joaquin County Red Cross Chapter to the San Joaquin County Medical Society on July 1.

The changeover was effected during June without loss of service to the community.

The local Red Cross voted to drop the blood program after its national headquarters announced a decision to withdraw most of its financial support from civilian blood banks.

Under management by the medical society the bank becomes a nonprofit community blood bank serving the counties of San Joaquin, Stanislaus, Calaveras and Tuolumne. It now joins the eleven other member banks of the California Medical Association's statewide "life line."

SONOMA

More than 100 members from the medical societies of **Sonoma, Napa, Solano, and Marin** counties attended the Four County Annual Get-Together last month at the Sonoma Golf and Country Club. Following an afternoon of golf, marked by high winds and higher golf scores, a social hour and a steak dinner wound up the evening's festivities. Brief speeches were given by California Medical Association officers. The Sonoma County Medical Society was the host for this year's event, presided over by Dr. William J. Rudee, president.

POSTGRADUATE EDUCATION NOTICES

UNIVERSITY OF CALIFORNIA AT LOS ANGELES

Three-day Symposium in San Diego: **Highlights of Clinical Endocrinology**, July 28; **Use of Physical Medicine in General Practice**, August 4; **Problems in Anesthesia**, August 11.

Fall Schedule:

Surgical Anatomy—September 8 to November 10, Wednesday evenings.

Fundamental Principles of Radioactivity—September 16, 1954, to July 7, 1955, Thursday evenings.

Evening Medical Lecture Series—September 27 to December 13, Monday evenings.

Dermal-Abrasives-Planing Techniques—September 29 to November 3, Wednesdays.

Three-Day Symposium in Riverside: **Highlights of Endocrinology**, October 13; **Anesthesia**, October 20; **Peripheral Vascular Diseases**, October 27.

Anesthesiology—November 4 to 5.

Dermatology—November 10 to December 15, Wednesdays.

Contact: Mrs. Margaret H. Griffith, Assistant Head of Postgraduate Instruction, Medical Extension, University of California, Los Angeles 24, California.

UNIVERSITY OF CALIFORNIA, SAN FRANCISCO

Conference on General Surgery

Date: September 13 through 17, all day, at Medical Center. This conference will be offered for the purpose of stressing the newer concepts, methods of diagnosis, treatment and techniques in surgery. Throughout the session emphasis will be placed on the diagnosis and treatment of malignant lesions. Instruction will consist of didactic periods, panel discussions, and actual operative demonstrations which will be televised from the operating room to the lecture hall. This program will be designed for general practitioners who are doing surgery. The class will be limited.

Conference on Fractures and Diseases of the Bone

Date: September 20 through 23, all day, San Francisco County Hospital. The program will cover the newer concepts, methods of diagnosis, treatment and techniques. There will be didactic lectures, panel discussions, and actual demonstrations of illustrative cases. The class will be limited.

Medicine for General Practitioners

Date: September 21 to December 7, Tuesday evenings, East Oakland Hospital, Oakland. This is a continuation course which is offered every year, with complete change of program and speakers. Class limited.

Evening Lectures in Medicine, Part 1 and Part 2

Date: September 16 through December 9, Thursday evenings, Mills Memorial Hospital, San Mateo. This is also a continuation course which will be of interest to both internists (Part 1) and to physicians in general practice (Part 2).

Symposium on Endocrine Diseases and Geriatrics

Date: October 22, 23, 24 (week-end), University of California Extension Building, 540 Powell Street, San Francisco. A review of recent developments in both fields, with suggestions for the management of patients past the age of fifty.

Contact: Stacy R. Mettier, M.D., Head of Postgraduate Instruction, Medical Extension, University of California Medical Center, San Francisco 22, California.

COLLEGE OF MEDICAL EVANGELISTS

Diseases and Injuries of Bones and Joints (4 weeks) Full time.

Date: July 5 through 30, 1954. Dr. Taylor's office and various hospitals. Tuition: $100.00. G. Mosser Taylor, M.D., Alonzo J. Neufeld, M.D., and Associates. Unless otherwise stated or arranged, courses will be held in Osler House, corner State and Michigan Avenues.

Contact: Chairman, Section on Graduate and Postgraduate Medical Education, College of Medical Evangelists, 312 North Boyle Avenue, Los Angeles 33, California.

UNIVERSITY OF SOUTHERN CALIFORNIA

Dermatology and Syphilology—Beginning September 13, 1954. Fee: $1,000.

This is a full-time course of twelve-month duration, carries thirty-two units credit toward the graduate degree of Master of Science, and is accredited by the American Board of Dermatology and Syphilology. It is designed for physicians who plan to take the examination for certification by the Board. Dr. Maximilian E. Obermayer is the course director. The course is presented only every third year and open to not more than twelve qualified physicians.

Contact: Robert S. Cleland, M.D., director, Medical Extension Education, University of Southern California School of Medicine, 2025 Zonal Avenue, Los Angeles 33, California.

INFORMATION

Federal Medicine

Its Impact on the Medical Care Of the American People

WALTER B. MARTIN, *M.D.*, Norfolk, Virginia
President, American Medical Association

DURING THE PAST TWO DECADES there has been a vast expansion of federal medical services, as there has been an extension of federal activities into many other fields of American life. This has been brought about partly by numerical additions to the veterans population and to the maintenance over the past 13 years of greatly expanded armed forces. It has been further magnified, however, by policy and administrative changes which have brought more and more persons into the federal medical system.

At the same time, the needs and desires of the general population for more medical services have increased. Advances in the science of medicine have changed the pattern of medical care. With control of the acute infectious diseases and the consequent prolongation of life expectancy, a constantly increasing segment of our population is arriving at an age characterized by a larger percentage of the chronic diseases. Here is indeed a paradox. The very success of medicine has increased rather than diminished our medical burden. Medical schools have expanded their output of physicians to a greater degree than the population increase. The auxiliary troops of medicine, registered nurses, practical nurses and technicians of all kinds have been increased in numbers, but still the demand persists for more and more personnel in all fields of medicine. The requirements of public health, local, state and national, have grown rapidly. There is a constant need for more trained workers in the field of medical research. Improvement in transportation, availability of more and better technical equipment and the aid of technical assistance have all added to the output of the individual physician. Still the demand is not entirely satisfied. What should or can be done? The usual answer from the social planners is to obtain federal funds to finance medical and nursing education and to provide scholarships. With many other demands on the manpower pool, there must be a point when the number that go into medicine and its allied branches will be limited by the supply of properly equipped students.

For these reasons, it may be well to seek means of making more efficient use of our medical resources, and to consider whether by dispersion of our personnel and facilities, we are impairing their effectiveness.

At the present time the federal government is engaged in five major medical activities in addition to 52 other health programs scattered throughout various departments and bureaus of the federal government. We are concerned today, however, with the five major federal efforts in the medical field. These five agencies, the Army, the Navy, the Air Corps, the Public Health Service and the Veterans Administration, are building hospitals and giving medical services to many of our people, aside from those for whom they are primarily responsible. They are each operating residency training programs and in some instances intern training programs, in addition to the long established training programs of the voluntary teaching hospitals. This brings the federal medical services into competition not only with each other, but with civilian facilities for physicians, nurses and trained medical personnel of all kinds. Fifteen years ago these federal agencies did not loom large in the total picture of American medicine, but with their great expansion in recent years they now absorb an important percentage of our total medical resources. It may be well to examine this situation and to enlighten ourselves on how this growth has taken place.

The medical services now provided by the Veterans Administration had their origin in rather recent times, and stem from an amendment to the War Risk Insurance Act of 1917. It is true that prior to that time the old soldiers' homes furnished domiciliary care for aged and dependent veterans. The Act of 1917 provided in respect to service-connected disabilities

> "that there shall be furnished by the United States such reasonable governmental medical, surgical and hospital services . . . as the director may determine to be useful and necessary."

In 1921 the veterans bureau was established and certain then existing federal hospitals were transferred to that agency. In 1923 the service-connected load on veterans hospitals was so diminished that a considerable number of vacant beds existed. The Congress at that time authorized the care in Veterans Administration hospitals, if beds were available, of veterans of the Spanish American War, Philippine Insurrection and the Boxer Rebellion, suffering from neuropsychiatric or tuberculous diseases, regardless of service connection. Here was established a precedent for the care by the federal govern-

Reprinted from the *Southern Medical Journal*, Journal of the Southern Medical Association, Birmingham, Alabama, 46, 12:1151-1155, Dec. 1953. Copyright, 1953, by Southern Medical Association.

Read in Opening Assembly, Southern Medical Association, 47th Annual Meeting, Atlanta, Georgia, October 26-29, 1953.

ment of non-service-connected cases. It also established the fallacy that the authorization of the use of surplus beds would not eventually lead to continued expansion of facilities in order to make sure what vacant beds did exist. It was provided in the Act that the additional services offered were not mandatory but were only available on the basis of existence of vacant beds.

The effect of this Act was to bring about material expansion of Veterans Administration hospitals and facilities. Under successive acts of the Congress restrictions as to diseases treated, length of time of service and service-connection were removed and except for the temporary retreat following the Economy Act of 1933, there has been a steady extension of Veterans Administration medical care furnished the veterans population. The Act of 1934, now the most untouchable of acts, removed all restrictions imposed during the economy drive of 1933 and subsequently led to rapid expansion of the Veterans Administration medical program. Before the impact of World War II, the Veterans Administration hospitals were expanded from a bed capacity of 15,400 beds in 1923 to 61,849 in the year 1941. This growth has continued at an accelerated rate and as of May 1953 there are 121,624 authorized beds. Admissions to these hospitals per annum have been increased from 130,456 in 1936 to 509,720 in 1951.

The Veterans Administration is now operating under the amendment passed in 1934 that provided

"that any veteran of any war, who was not dishonorably discharged, suffering from disability, disease, or defect, who is in need of hospitalization or domiciliary care and who is unable to defray the necessary expenses therefor (including transportation to and from veterans facility) shall be furnished necessary hospitalization or domiciliary care, including transportation, in any Veterans Administration facility within the limitation of existing beds in such facilities irrespective of whether the disability, disease or defect was due to service. A statement under oath by the applicant on such forms as may be prescribed by the Administrator of the Veterans Administration shall be accepted as sufficient evidence of inability to defray necessary expenses."

The administrators have consistently held to the position that under the law they could not go back of the oath to prove fraud. Under the pressure of recent circumstances, however, there has been a tendency to alter this position somewhat. Congress, also by specific act, has established the dictum that if a certain time interval exists between discharge from service and development of 32 disease entities, they automatically become service-connected.

We now have in this country a veterans population of over 20,000,000. This has been increasing at the rate of about 1,000,000 a year. As of July 31, 1952, the Veterans Administration operated 154 hospitals. These hospitals had an average of 759 beds, or a total of 116,986 beds. Also, in 1952 there were 18 new hospitals, and four additions with a total bed capacity of 13,231 beds under construction. Moreover, there were six new hospitals of 5,000 beds in the advance stage of planning. The 13,000 beds under construction in 1952 were estimated to cost the taxpayers $264,000,000. As of June 30, 1953, over 104,000 patients were under Veterans Administration hospital care. The Veterans Administration's Annual Report for the year showed that only 35 per cent of these patients were under treatment for conditions resulting from service in the armed forces. The remaining 65 per cent were under Veterans Administration care for illnesses or accidents incurred in civil life, and in no way related to military service in peace or war. In 1951, approximately 512,000 patients were discharged from Veterans Administration hospitals. Of these about 85 per cent or 440,784 were general medical and surgical cases, exclusive of tubercular and psychiatric cases. Of nearly half a million veterans in the general medical and surgical category treated in the course of a year in Veterans Administration hospitals, only 15.4 per cent were under treatment for conditions incident to military service. The remaining 84.6 per cent were non-service-connected, and had signed an oath of inability to pay for the hospital and medical care furnished at the expense of the American taxpayer. How large a proportion of these statements were fraudulent, no one at present can tell. It is doubtful, however, that the percentage of indigency is so high in our veterans population. A recent report to the Congress by Controller General Lindsay Warren records a survey of 500 veterans picked at random who were being treated in Veterans Administration hospitals. Of this number 336 had annual incomes of $4,000 to $50,000 with 25 of these having assets between $20,000 and $500,000.

The total medical budget of the Veterans Administration that was appropriated in 1953 by the Congress was $692,499,212, of which $600,000,000 goes to hospital operation and domiciliary care. Excluding the tuberculous and neuropsychiatric cases, non-service-connected cases in general, medicine and surgery are responsible for over half of this cost.

One large factor in cost is the length of stay in veterans hospitals compared to community hospitals. General medical and surgical cases remain in veterans hospitals for an average of 30.4 days, as compared to the average for civilian voluntary hospitals of approximately 7.5 days. The average cost per day for a general medical and surgical case in a veterans hospital, as of May 1953, was $18.24, or an average cost for the veterans in this group of $555, as against a national average of $148 in voluntary hospitals. Possibly, the most startling figure in the field of cost of veterans hospital operation is that from 1944 to 1952, when there was an increase of

from $72,000,000 to over $500,000,000 or approximately 700 per cent.

In 1952, the Veterans Administration employed about 175,000 individuals; 132,000 of these are connected with the veterans medical program. Six thousand were added during the year 1951. Veterans Administration employs 4,160 full-time physicians and nearly 3,000 part-time physicians. They have also utilized the services of a number of residences.

These figures are presented in order to point out the cost in materials, dollars and manpower of the operation of the present veterans medical system, and to indicate that the major part of this cost is involved in the care of veterans who are being treated for conditions incurred in civil life and not connected with their military experience.

The American Medical Association has repeatedly urged that the federal government furnish the best possible medical care for veterans whose medical disability stems from service in the armed forces. We believe the American people are willing and glad to support such service. We believe for the present, and until state and local facilities are more generally available, that good public policy requires that veterans with neuropsychiatric and tuberculous conditions unable to pay for hospital care should be treated in federal hospitals, whether or not service-connected.

We believe that the veteran with other than a tuberculous or neuropsychiatric condition, who has received no disability by reason of service in the armed forces and requires hospital care for conditions having origin in civil life, should not be a charge on the federal government. He should, if able, pay his own way and care for himself in the manner of his own choice. If he is unable to pay, he should be the responsibility of his community, as in the case of any other needy citizen.

The problem of medical and hospital care of dependents of service personnel in federal hospitals also deserves consideration. We as physicians are not primarily concerned with whether the government should provide for the medical care of dependents of servicemen as a part of their reward for service. This is a general problem connected with the rate of pay and other entitlements of the soldier; it is of interest to all of us as citizens and one that must be decided by the Congress. As physicians we are interested in how and when and where that service is provided. The present situation is eminently unfair to servicemen as a whole. Medical care is available only in those areas accessible to military hospitals and dispensaries. It is not available to those dependents remote from these facilities. The size of the group of service dependents is not exactly known, nor is the number of beneficiaries of government medicine in this field capable of determination, since there are no figures available. In certain particular areas estimates can be made. In the obstetrical field it is known that from 13,000 to 15,000 babies are delivered each month in military hospitals. It is also known that in certain geographical areas the number of dependents receiving care in service institutions comprises a considerable portion of the total patient load. We are interested in the effect of this situation on the voluntary hospitals and on the abilities of civilian medical personnel and institutions to provide good medical care for the general population.

The present system of providing medical service for dependents of service personnel has grown without planning or much thought, from a small acorn planted in 1884 that now is a mighty oak. At that time the Congress provided that in isolated army posts where civilian medical care was not available, the medical facilities of the post could be utilized for the care of service dependents if beds were available. By a series of amendments, judicial interpretations and departmental regulations, this privilege has been extended to all three branches of the service, and to the Coast Guard dependents. It has gone further than that. No longer are the civilian medical facilities of a community considered nor the provision concerning available beds. If beds are not available they are constructed. If medical personnel is not sufficient, it is drafted. If there is not enough paramedical personnel, it is hired. This attitude has led to the rapid expansion in many areas of the medical services offered to the dependents of service personnel, often to the detriment of the civilian facilities in these areas. It has also necessitated the drafting of additional physicians and the enlistment or employment of additional nurses and all types of medical technical personnel.

The American Medical Association believes that the original intent of the law still holds and that in foreign service and in areas in this country without sufficient civilian medical service and facilities to provide medical care to dependents, it should be provided by the armed services. We also believe that the Congress should decide whether medical and hospital care for all dependents of service personnel everywhere should be a part of the pay of the soldier, but that for the most part this care should be provided in civilian facilities. We believe if medical care is to be provided for this group it should be on an equitable basis so as to reach all dependents. This could be provided by increasing the basic pay scale for those having dependents or by some form of prepayment insurance for dependents.

The Hill-Burton Hospital Survey and Construction Act has been in effect since 1946. During that time the federal government had appropriated $542,500,000 for hospital construction. This has been matched

by double this amount from state and local sources. In addition, considerable hospital construction, financed by local resources alone has been stimulated. Civilian hospital construction has been carefully planned to meet the needs of all of our people. The civilian system now finds itself in competition with federal hospitals not only for doctors, nurses and technicians but for patients as well. As patients, whether dependents of service personnel or non-service-connected veterans, are drawn from a community into federal hospitals, the ability of that community to support its own hospitals is impaired and the cost per unit of hospital service rises. As the federal hospital system expands and there is need for more doctors, nurses and other personnel, the community is depleted of the technical and professional help that is necessary for good community medical service.

We find ourselves now with five federal hospital programs engaged in intern and residency training and utilizing the services of several thousand interns and residents. At the same time there are thousands of residencies and internships vacant in accredited voluntary hospitals. This element of an intern and residency program in these five federal medical services has been a strong influence in drawing into the federal hospitals non-service-connected veterans and dependents of service personnel. It is clear that in order to carry on an adequate medical training program a sufficient number of patients must be available and they must be so distributed as to provide diversified clinical teaching material. This material must include males, females, children and people in different age groups. Good training programs cannot be supported by the diseases and accidents of a healthy young age group as seen in service personnel, nor can sufficient teaching material be found in the service-connected group of veterans. It is necessary, if these training programs are to continue and be acceptable, that they maintain a sufficient flow of patients distributed throughout the various categories needed.

Certain questions now naturally arise. Can we as a people afford six intern and resident training programs with the consequent dilution of our available teaching and other medical resources? Can we afford the continued competition between separate systems of medical care devoted to the interest of special groups? These powerful forces are tending to draw more and more patients into the federal orbit. With the aging of the veterans population and a continuation of the present veteran policy, in another 20 years the capacity of the veterans hospitals will have to be doubled. If provision for the medical care of all service dependents is by law provided in federal hospitals, an enormous increase in their facilities and medical personnel will be required. That can only mean a progressive decline in the strength and usefulness of our great voluntary hospitals and teaching system. It must also mean a great increase in cost which will be transmitted to all of us in the form of an additional tax burden. Already a large number of people have a vested interest in federal medical care. Other groups may be added such as federal government employees, their dependents, the indigent and medically indigent in our general population. Proposals have been made and bills have been introduced into the Congress that would move us further into the zone of federal responsibility for the hospital care of additional segments of our population.

Of this we can be sure. The present situation will not remain as it is. Federal medicine will continue to expand as it has expanded during the past 15 years unless the trend is reversed by the informed and determined action of the taxpaying and voting population of this country.

521 Wainwright Building.

THE PHYSICIAN'S *Bookshelf*

PHARMACOLOGY AND THERAPEUTICS—A Textbook for Students and Practitioners of Medicine—Second Edition. Arthur Grollman, Ph.D., M.D., F.A.C.P., Professor and Chairman of the Department of Experimental Medicine, Lecturer in Pharmacology and Toxicology, Southwestern Medical School, University of Texas. Lea & Febiger, Philadelphia, 1954. 866 pages, 127 illustrations, $10.00.

The general style of Cushny's original textbook on pharmacology has been continued in this second edition of Professor Grollman's excellent book. An outstanding improvement over Cushny's organization of topics is placing locally acting drugs, the effects of which in most instances are poorly understood, to a position in the book following the discussion of drugs with well established pharmacodynamic effects. Under the old Cushny plan, the student was introduced to pharmacology by a discussion of locally acting drugs, such as irritants and protective agents, with the result that he often lost interest and direction at the beginning of the course of study. Grollman starts the discussion of specific drugs with the general anesthetics with which most students already have some acquaintance and which have a dramatic action. He makes the pedagogic mistake, however, of a too detailed introductory chapter on general principles which the student can not understand until he has specific acquaintance with several types of drugs. It is to be hoped that most instructors who use this fine book will not bore their students with the introductory chapter at the outset, but will use Chapter 1 piecemeal as the occasion arises during the discussion of specific drugs. For example, dosage rules can be discussed in connection with Morphine and Other Opium Alkaloids (Chapter 4) to much greater advantage than at the beginning of the course. Likewise, each method of administration should be discussed at the time that the first drug requiring the method is discussed. Thus, administration by inhalation should be discussed in connection with general anesthetics, oral administration, distribution and metabolism under alcohol, hypodermic administration under morphine, etc. The same applies to the various types of pharmaceutical preparations. In other words, the pedagogic principle of going from the specific to the general should be followed. For reference purposes, most of the material in the Introduction would be placed to better advantage in a closing chapter on principles.

In the preparation of this book, Grollman has drawn upon his extensive personal experience in both clinic and laboratory, as well as his familiarity with the pertinent literature. Many of the illustrations are from his own records. Few authors have such a dual experience as both laboratory scientist and clinician. This experience has permitted the author to select in most instances the right laboratory evidence and principles of pharmacology for understanding the clinical uses of drugs, with excellent figures and graphs to show how drugs act. The book is of interest, therefore, to student, clinician, and laboratory investigator and the teacher should have no difficulty in maintaining student interest in the subject matter.

Grollman's *Pharmacology and Therapeutics*, in its 866 pages, contains 32 chapters, two appendices and a well organized index. Chapter 1 is the introductory chapter on principles of pharmacology and therapeutics, with definitions. Chapter 2 discusses inhalation anesthetics, Chapter 3 is a thoroughgoing description of the effects of alcohol, and opium alkaloids, synthetic analgetics (Grollman prefers the spelling "analgesic"), hypnotics and sedatives and the anticonvulsants make up the subject matter of chapters 4, 5, 6 and 7. Central nervous system stimulants (except amphetamine and methamphetamine) are compressed into Chapter 8. Chapter 9 contains several well-drawn illustrations of autonomic neuroeffector pathways and a general discussion of autonomic pharmacology, which sets the stage for the next six chapters on epinephrine, ergot, acetylcholine, physostigmine, atropine, nicotine, quaternary ganglionic depressants, histamine and the antihistaminics and related compounds. Then follow chapters on local anesthetics, cardiovascular drugs, gastrointestinal drugs, diuretics, an introductory chapter on chemotherapy, the sulfanamides, antibiotics, antimalarials, amebacidal drugs, local antiseptics, hormones, vitamins, hematopoietic agents, coagulants and anticoagulants, antihematopoietic drugs, water, ions and gases, metalloids, heavy metals, immunizing preparations, protein hydrolysates and diagnostic agents. Prescription writing is adequately discussed in the six pages of Appendix A. Appendix B is entitled "Classification of Drugs According to Their Therapeutic Uses"; this is helpful to the physician in selecting a drug for a particular therapeutic indication.

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ELECTROCARDIOGRAPHY. E. Grey Dimond, M.D., Professor and Chairman, Department of Medicine; Director, Cardiovascular Laboratory, University of Kansas Medical Center. The C. V. Mosby Company, St. Louis, 1954. 261 pages, 272 illustrations, $14.00.

Electrocardiography by E. Grey Dimond, M.D., is the first edition of a textbook proposed as a new method of teaching "blackboard electrocardiography" for the general practitioner and medical student. Dr. Dimond contends that electrocardiographic teaching of beginners can best be accomplished by a series of organized lectures and not by "bedside teaching"; accordingly, this book represents such a series of lectures. Many teachers in the field of electrocardiography would not agree with this basic premise.

The section on electrocardiographic machine artifacts is a valuable one for the beginner and the problems in the technique of taking a record are well summarized; unfortunately, no mention is made nor illustrations shown of errors in placement of extremity electrodes. The chapter on vectors is very well illustrated. Throughout the book references are appropriately inserted in the text itself rather than at the close of chapters.

There are many minor points of issue to be taken with the author. Recent work has shown that it is the Q-U interval and not the Q-T interval that is prolonged in hypokalemia; furthermore, the correlation between the electrocardiogram and the serum potassium level is often crude in contrast to the author's statement that the electrocardiographic changes can be fairly closely correlated with the level of potassium. He advocates measurement of the intrinsicoid deflection from the onset of the Q to the peak of the R wave, which has been demonstrated by autopsy material not to be the best correlation with the left ventricular wall thickness as contrasted with a measurement from the nadir of the R to its peak. The section on the diagnosis of A-V nodal rhythms should have emphasized the inverted T wave in lead aVF in these conditions, a fact that has been omitted. The reviewer also takes issue with the author in his statement that measurements of amplitude in right and left ventricular hypertrophy are "misleading and no rules should be applied"; there are many clinicopathological studies that prove the worth of amplitude measurements in both of these conditions. In the part devoted to the Master exercise tolerance test, it should have been mentioned that a reversal of the T wave in lead III alone is not a "positive test"; furthermore, it should also have been noted that the test is to stop in the event thoracic pain develops. Although there are six illustrations in the book of the Wolff-Parkinson-White syndrome, there is no illustration of a more common condition such as subendocardial infarction. Lastly, it would have been preferable to illustrate the section on acute cor pulmonale with precordial and unipolar extremity leads as well as with standard leads alone.

The foregoing judgments may be based on mere differences of opinion and approach to this field. The reviewer feels that the following criticisms are of matters in which the book falls short of its proposed objectives and fails to secure for itself a desired place in the field of electrocardiographic textbooks. The author interprets electrocardiograms in his book in a "vector manner" which, in the opinion of the reviewer, is still experimental and not practical at this time for the individuals at whom the book is aimed. Secondly, the chapter on electrocardiography in congenital heart disease is suddenly diverted to a discussion of the cardiodynamics, murmurs, x-ray catheter and fluoroscopy findings in this field. It is not fitting for a book on electrocardiography to contain such detailed discussions. Furthermore, it is not appropriate for an electrocardiographic textbook to discuss therapy of arrhythmias; and one could easily take issue with the author's statements on combined quinidine and digitalis therapy. In conclusion the reviewer feels that the book can be recommended for the general practitioner and medical student only for its discussion and illustrations of vectors and for its illustrated classroom electrocardiographic teaching devices.

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MANUAL OF MEDICAL EMERGENCIES—2nd Edition. Stuart C. Cullen, M.D., Professor of Surgery, Chairman, Division of Anesthesiology, and E. G. Gross, M.D., Professor and Head of Department of Pharmacology, both from State University of Iowa College of Medicine. The Year Book Publishers, Inc., Chicago, 1953. 278 pages, $4.50.

The authors of this Manual, one an anesthesiologist and the other a pharmacologist, have combined their talents to again present the problem of medical emergencies in a concise and readable manner. The important additions in the second edition are concerned with bringing up to date the management of artificial respiration; and the presentation of the ever-present problem of cardiac arrest. It is recommended that the Manual repose on the physician's library table only long enough to permit a complete reading, thereafter to be carried in the emergency bag.

DICTIONARY OF PSYCHIATRY AND PSYCHOLOGY —An Illustrated Condensed Encyclopedia of Psychiatry, Neurology and Psychology. William H. Kupper, M.D. With a Foreword by Douglas M. Kelley, M.D., Professor of Criminology, University of California. The Colt Press, Lackawanna Plaza, Paterson 3, N. J., 1953. 194 pages. $4.50.

This is a condensed dictionary-encyclopedia and reference work of 194 pages. One is concerned, therefore, with two points—the selection of the material which is given and the accuracy of the definitions given. The selection of material seems to have been highly individual and too dependent upon some subjective evaluation on the part of the author. There is a large amount of neurological material which might well have been discarded in order to allow more material dealing with psychiatry and psychology to be given.

A great many organizations are listed, some of which do not appear to be psychiatric; as for example, Kabat-Kaiser Institutes. The American Board of Psychiatry and Neurology, the American Institute of Psychoanalysis, and the American Psychiatric Association, are listed, but nowhere does one find reference to the American Psychoanalytic Association, the largest organization of its kind in the country.

There is a long list of psychiatric and psychological journals. There is likewise a list of state hospitals for mental disease. Here one notes that the Boston Psychopathic Hospital, one of the Massachusetts state hospitals, and the Langley Porter Clinic, one of the California state hospitals, are not mentioned, although the Psychiatric Institute and Hospital is listed under the New York state hospitals.

The names of a number of well-known criminals who were examined by psychiatrists are given, sometimes with a brief mention of the salient points of the case, sometimes with merely a reference to books or articles. Names of many well-known scientists, both living and dead, are also given. Sometimes the dates of birth and of death are given, other times they are omitted with no apparent reason for the omission. Some of these names do not seem to belong particularly to psychiatry or psychology. When one looks for the names of living psychiatrists he discovers that the author apparently considers only two living psychiatrists deserving of mention; namely, Karl Augustus Menninger and William Claire Menninger.

In general, the definitions given are reasonably accurate, but exception could be taken to a number.

Looking up the word "murder" one finds a number of books listed, followed by this statement, "Reich points out that the murderer often defecates at the scene of his crime, leaving a sort of *carte de visite odorante*." This is certainly an unusual presentation with no definition and one very questionable bit of material.

If one also looks up the word "orgasm" the following material is given: "Climax of sexual intercourse. See W. Reich: Function of Orgasm. Orgone Press." With all the really worthwhile material on such a subject one wonders why the author mentions only the writings of one who is generally discredited.

This volume is somewhat of a hodgepodge of material, the selection of such material being apparently determined by the author's particular interest rather than any real attempt to give a thorough or adequate covering or to pick what would ordinarily be regarded as the more important, and to leave out the less important. There are a number of definitions which are inaccurate or poorly worded so that the meaning is not clear. On the other hand, it may be said that one will find a number of quite unusual things which would not be found in ordinary volumes of this sort.

ANTISEPTICS, DISINFECTANTS, FUNGICIDES, AND CHEMICAL AND PHYSICAL STERILIZATION. Edited by George F. Reddish, Ph.D., Sc.D. (Hon.), St. Louis College of Pharmacy and Allied Sciences. Lea & Febiger, Philadelphia, 1954. 841 pages, 71 illustrations, $15.00.

Faced with a volume of something over 800 pages on the subject of discouraging or killing germs—exclusive of the therapeutic antimicrobial agents—this reviewer felt at first daunted by the prospect of a long, dry task. Happily, this proved not to be the case, for although the book cannot be recommended for a cozy evening's reading it turns out to be a remarkably interesting compilation of information and viewpoints assembled by the editor and 30 contributors. The 35 chapters converge upon the general subject of disinfection from various angles, and where overlapping occurs the reader benefits by the different pathways leading into the information which he desires. The subject of disinfection is first discussed in its general and historical aspects, including various methods of testing the efficacy of substances and the nature of bacterial resistance. A number of chapters deal with single substances or groups of substances and their mechanisms of action as well as practical uses. Other chapters approach the subject from the standpoint of particular groups of infectious agents and the methods applicable to them, as for example is the case in Chapter 18 where viricidal agents are dealt with. Still other chapters deal with a particular purpose and how it may be met, as in a chapter dealing with surgical antiseptics, and another with chemical disinfection of surgical instruments. Thus, the chapter on iodine pretty thoroughly goes into the actions and uses of this substance in its various forms, while another chapter which may be mostly concerned with surgical antisepsis includes iodine compounds again, but more pointedly discussed with reference to a particular kind of usefulness. One section of the book deals with chemical and physical sterilization methods including heat, gaseous sterilization, and the use of ionizing radiations. A final chapter takes up pasteurization.

A book of this kind is obviously not intended for the general medical reader. There may be some, however, such as surgeons especially interested in or responsible for problems of antisepsis, who will find clarifying answers to many of their questions here, and certainly the book should be available in every hospital. Aside from this use, it should prove to be a valuable reference book for those concerned with problems of public health and sanitation and for bacteriologists. Needless to say, it will be very helpful also to those concerned with food preservation and with various industrial processes in which microbial life plays a part.

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AUDITORY DISORDERS IN CHILDREN — A Manual for Differential Diagnosis. Helmer R. Myklehurst, Professor of Audiology, Professor of Otolaryngology, Northwestern University, Grune & Stratton, New York, 1954. 367 pages, $6.00.

The book presents a detailed one-year study of 228 children between the ages of six months and seven years who had been referred to the Children's Center for auditory disorders at the Northwestern University Medical School. Most of them had been diagnosed as deaf and all had very little speech; however, 55 per cent of the patients were found to have normal hearing, the auditory disorders being caused by emotional disturbances, aphasia, or mental deficiencies.

The book is divided into five parts with several chapters in each part. At the close of each chapter is an excellent summary.

The first part deals with the problem in general, i.e., language development in children, and the part played by the medical as well as the lay specialists in assisting in this development.

The second part emphasizes the importance of obtaining a painstaking history and performing careful clinical examination, which with proper interpretation are of utmost value in making a diagnosis.

Part three describes behavior, symptomatology in auditory disorders due to peripheral deafness, aphasia, psychic deafness and mental deficiency.

Part four completely details the examination methods and procedures with the use of tests, the auditory capacity and the psychological examination.

The last part presents case histories, illustrating each condition together with recommended therapy.

The book is well written and gives definite aid to the practitioner in making a diagnosis and treating the various forms of auditory failure.

It is well worth a place in the library of the otolaryngologist, the pediatrician, the neurologist, the psychologist and the educator.

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ANTIBIOTICS—2nd Edition. Robertson Pratt, Ph.D., Professor of Pharmacognosy and Plant Physiology, and Jean Dufrenoy, D.Sci. (Paris), Research Associate in Antibiotics, both from the University of California College of Pharmacy. J. B. Lippincott Company, Philadelphia, 1953. 398 pages, $7.50.

The volume contains considerable information of real interest to every student of antibiotics which is not available in treatises with a more clinical flavor. The industrial, agricultural, veterinary and broader economic aspects are featured. Neither author is a physician, hence they have wisely minimized clinical discussions. However, it would have been better if medical problems had not been discussed at all because some therapeutic methods described were abandoned long ago. The bibliographies are not designed to be comprehensive but do not accomplish the stated aim of providing a key to the literature, at least in the field of medical therapy. The book is recommended as a source of interesting background material concerning laboratory and industrial aspects of antibiotics but it is not recommended as a guide to the physician or medical student.

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DISORDERS OF THE BLOOD—Diagnosis, Pathology, Treatment, Technique—7th Ed. Sir Lionel E. H. Whitby, C.V.O., M.C., M.A., M.D. (Cantab.), F.R.C.B. (Lond.), D.P.H., Regius Professor of Physics in the University of Cambridge; and C. J. C. Britton, M.D. (New Zealand), D.P.H., Physician and Hematologist to the Prince of Wales Hospital. 856 pages, $9.50.

This volume has undergone seven editions since it was first published in 1935 and is now brought up to date to the middle of 1953. The chapter on the hemorrhagic diseases is excellent with a section even on the recently described Christmas disease (PTC deficiency) and methods for the differentiation of hemophilia from the hemophiloid disorders. Discussions of newer chemotherapeutic agents such as the steroids, TEM and Myleran are included but 6-mercaptopurine is not mentioned. The various hemoglobins are considered but a typographical error might be responsible for the statement that it seems *likely* that hemoglobin C is the abnormal hemoglobin which causes Mediterranean anemia.

This is primarily a reference volume but is concise and readable in the manner peculiar to much of the British medical literature. This book presents current British hematologic thought and is one of the best hematologic texts available. It is recommended for the medical student as well as the practitioner and specialist interested in the field of hematology.